

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF

MILLER et al.

Appln. No.: 10/806,223

Filed: March 23, 2004

Title: COUNTERFLOW INSECT TRAP



Group Art Unit: 3643

Examiner: K. ROWAN

* * * * *

DECLARATION TRAVERSING REJECTIONS UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I am the President of American Biophysics Corporation ("ABC"), which is the assignee of United States Patent Application No. 10/806,223 ("the '223 application"), entitled Counterflow Insect Trap. ABC is engaged in the manufacture and sale of insect traps, and in particular of innovative insect traps embodying the subject matter claimed in accordance with the '223 application.

Included below as Table 1 is a list of insect traps (branded the "Mosquito Magnet") sold by ABC between March 1998 and September 2004.¹ A total of 652,641 traps have been sold during that time period. From the chart, it is evident that sales have increased each year from 1998, despite the introduction to the marketplace of several competing brands of traps.

The innovative insect traps sold by ABC were constructed according to the disclosure and claims of the '223 application. Specifically, these traps are covered by independent claims 1, 24, 39, 50, 83, and 112, as well as many dependent claims, including but not limited to dependent claims 22, 71, 78-82, 84, 105, 111, 113, 122, and 123. The traps sold all use innovative technology to attract and capture insects and are especially effective at trapping blood-seeking insects such as mosquitoes, no-see-ums, black flies and sand flies. The traps range in price from about \$260.00 to about \$1,395.00.

¹ The years set forth in the table reflect ABC's fiscal years, which run from October 1 to September 30, as opposed to the calendar years. For example, ABC's fiscal year for 2000 runs from October 1, 1999 to September 30, 2000.

Specifically, ABC's Mosquito Magnet sales are shown below in Table 1:

1998-2004 Unit Sales

	1998	1999	2000	2001	2002	2003	2004	Total	Retail \$
PRO Plus	0	0	0	0	0	0	6,321	6,321	\$1,395
PRO	75	582	3,825	15,913	27,915	22,895	13,368	84,573	\$1,295
Freedom	0	0	835	15,759	18,193	337	127	35,251	\$795
Liberty Plus	0	0	0	0	0	0	47,305	47,305	\$695
Liberty	0	0	0	0	60,422	93,140	69,376	222,938	\$495
Defender	0	0	0	0	0	119,897	99,094	218,991	\$295
Garden Edition	0	0	0	0	0	9,515	27,747	37,262	\$260
Total	75	582	4,660	31,672	106,530	245,784	263,338	652,641	

TABLE 1

As can be seen from Table 1, ABC has experienced tremendous unit sales growth from year to year. From 1998 to 1999, unit sales increased by 676%, from 1999 to 2000 by 700%, from 2000 to 2001 by 579%, from 2001 to 2002 by 236%, and from 2002 to 2003 by 131%. In all, unit sales grew over the five year period beginning in 1998 by a factor of over 3200.

Prior to ABC's introduction of its innovative insect traps into the market, I know of no flying insects traps that were sold commercially to the general public in the \$1,000.00 price range. At the time ABC began selling its innovative traps, flying insect traps and killing devices such as "bug zappers" and similar devices, were typically priced in the vicinity of approximately \$50.00 to \$80.00. As noted above, the prices of ABC's traps range between \$260 and \$1395, and for the first four years of sales, the price was between \$795 and \$1295. During those first four years, despite the fact that the ABC traps cost 10-25 times as much as other devices on the marketplace (i.e., those devices mentioned above in the \$50-80 price range), ABC experienced an average annual growth rate of 600% in its unit sales of its innovative insect traps. Further, in the years 2001 and 2002, when ABC began introducing lower priced versions of its innovative insect traps, ABC still experienced growth rates of 236% and 131%, respectively. Still, those lower priced counterflow insect traps are priced significantly higher than the other devices on the market in the \$50-\$80 price range.

Given the large disparity in price between ABC's insect traps and other devices on the market, it is evident from the rapid growth shown above in Table 1, that ABC's innovative traps work substantially better than any alternatives available in the marketplace. Along with the "bug zapper" type traps, the industry standard was the "CDC light trap," developed by the Centers for Disease Control in the 1960s. These types of traps also cost on the order of \$100 or less, much less than the ABC traps listed above and similar to the bug zapper traps. Customers have been willing to pay between five and 20 times the price of many of the other devices that were on the market (e.g., the \$50 to \$80 devices mentioned above). This success came about because the ABC traps work substantially better than other devices by capturing and eliminating large numbers of insects.

Because of the effectiveness of the ABC devices in catching blood-seeking flying insects, particularly mosquitoes, no-see-ums, black flies and sand flies, ABC, starting out as a newcomer to the commercial market as discussed above, has been able to sell 652,641 traps

through September 2004. Total retail sales of well over 250 million dollars have been made. The unit sales have increased steadily despite several years of continuous growth and the introduction of additional competing products. Thus, the commercial success of the ABC traps is clear.

In a previous Declaration dated July 24, 2003, and filed in the parent application, Ser. No. 09/682, 247 application ("the '247 application'"), I attested to the commercial success of the insect traps sold by ABC. As I understand it, the Examiner of the '247 application stated in an Official Action that my July 24th Declaration was insufficient because there were no facts on advertising expenses and market share. Based on my experience in the insect trap marketplace as President of ABC, I do not believe that such information would be meaningfully relevant to the issue of the commercial success of the ABC traps. Specifically, as discussed herein and in my Declaration of July 24, 2003, prior to the introduction of ABC's innovative traps, commercially available traps were priced in the range of \$50-80 dollars. Even in view of the availability of those low-priced traps, the ABC traps experienced tremendous commercial success at significantly higher price points. In fact, during the first four years of sales of the ABC traps, they were priced 10-25 times higher than other devices available on the marketplace (i.e., those mentioned above in the \$50-80 price range). In view of these facts, I believe that evidence of market share and/or advertising expenses would not be particularly probative of the issue of commercial success. This is because comparing the higher priced ABC traps against the significantly lower priced prior devices in terms of market share is not a fair nor relevant comparison. Also, given the nature of the marketplace, and particularly the significantly higher price of ABC's innovative traps relative to other alternatives at the time of introduction, as a matter of common sense the commercial success could not be explained by advertising alone because no reasonable consumer is likely to pay many hundreds of dollars for an insect trap if a comparable one were available for less than one hundred dollars, no matter how effectively the higher priced trap is advertised.

Instead, the important fact that supports the commercial success of ABC's innovative traps is that consumers have been willing to purchase these higher-priced ABC traps even when faced with the choice of purchasing significantly lower-priced devices. Based on my experience in and understanding of the insect trap marketplace, this commercial success of the ABC insect traps is directly attributable to the use of the relationship between the inflow and outflow of these traps that enables the ABC traps to effectively attract and capture insects better than the lower-priced alternatives. This is the same relationship recited in the independent claims of the present application.

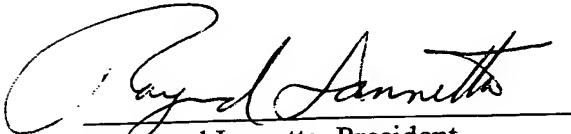
As additional evidence of commercial success, attached at Exhibit A is a copy of an article from the Fall 2003 edition of Inc. magazine, naming ABC as the fastest growing private company in the United States. This notable achievement is attributable to ABC's sales of its innovative insect traps, which are its primary products, and generated nearly all the revenue that drove ABC's rapid growth.

Also, various models of the Mosquito Magnet, a brand name for ABC's traps, have been favorably tested and reviewed in the Wall Street Journal (July 20, 2001), Consumer Reports (May, 2003), The Boston Globe (July 6, 2001), The Miami Herald (July 22, 2002), and The Washington Post (July 14, 2002; July 18, 2002). Copies of these articles are attached to this Declaration as Exhibits B-F, respectively, and further support the commercial success of ABC's innovative insect traps.

Further, in five independent studies, models of the Mosquito Magnet were found to be more effective than competitors' products. These studies were performed by the Cayman Islands Mosquito Research & Control Unit; Florida A&M University; Taylor Environmental and Biological Specialists; University of North Dakota; and U.S. Army Medical Command in conjunction with the Centers for Disease Control. Attached to this Declaration as Exhibit G is a sheet summarizing the five studies, evidencing the superiority of ABC's innovative insect traps to the competition.

Finally, the International Trade Commission has found ABC's products to be commercially successful. Specifically, in an Initial Determination, attached at Appendix H, the ITC addressed the issue of commercial success at page 67, n. 1 and pages 90-94. The products found by the ITC to be commercially successful are the same as those discussed herein.

The undersigned acknowledges that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon. All statement made based on the declarants's own knowledge and all statements made on information and belief are believed true.



Raymond Iannetta, President
American Biophysics Corporation
Date: October 29, 2004

INC.
500

The No.1
Company

Growth of 25,615%!

IN THE LATE '90S, AMERICAN BIOPHYSICS ATTACHED THE TAG LINE "Fatal attraction for mosquitoes" to its flagship product. But when the company was just getting started, the four engineers who founded it had a very different objective—trying to keep the fragile mosquitoes alive. Back in 1991, the U.S. Army had issued bids for technology to survey the spread and impact of insect-borne diseases such as malaria, lyme, and the then little-known West Nile virus. To see a virus in action, researchers needed carrier specimens alive and kicking. Thus American Biophysics rolled out the

SWAT TEAM: Ray Iannetta and Emma Durand have some 400,000 Mosquito Magnets in circulation—and the fastest-growing private company in America.

ABC Pro. Using standard mosquito bait, pure CO₂, it drew the biters to a container where an artificial breeze pinned them down safely. At the time, the only commercial application foreseen

for the ABC Pro was entomological surveillance—mostly by government, medical, or educational institutions. But scientists found the ABC Pro inefficient because they had to attend to it constantly, providing their own supply of dry ice (which “melts” into CO₂ vapor) or cylinders of the gas in compressed form to attract bugs. By 1997, the company was essentially bankrupt.

Searching for cash and guidance, its investors called on Ray lanetta, who had launched and sold three successful high-tech companies with longtime business partner Emma Durand. “When they approached me with the business plan,” remembers lanetta, now CEO of the company, “I said, ‘It’s bugs? I’m not biting.’ And I threw it in the basket.” But lanetta’s personal CPA, an early investor named Jeff Adam, made a plea for him and Durand to take another look.

An engineer and intellectual property expert, Durand saw a challenge: “Could we convert a niche surveillance tool to something that was commercially viable?” The potential to target problem insect populations without environmentally toxic pesticides and without harming benign species gave her hope. In July 1998, she and lanetta joined the company as chief of engineering and CEO, respectively. In 2001, they appointed Jeff Adam CFO.

THE EUREKA MOMENT CAME IN EARLY 1999. In Durand’s words: “We discovered a way to catalytically convert propane to yield CO₂ and enhance this attractant with additional chemicals expelled through a patented mechanism.” In laymen’s terms: They made a machine that could lure and kill biting insects 24-7 on autopilot. Together, lanetta and Durand invested a million dollars of capital and 24 months of labor.

Today, the Mosquito Magnet looks like the robotic love child of a propane grill and a vacuum cleaner. It works with patented “counterflow” technology, a two-fan system that generates both an updraft, to carry the smell of dinner to the insects, and a down-draft, to force them into a mesh net at the center of the machine. Unable to fight the breeze, the mosquitoes die of dehydration. American Biophysics says the Mosquito Magnet can snag up to 1,500 biters a night. It also boasts that in the summer of 2000, the U.S. Army Medical Command and the CDC found that the Mosquito Magnet captured three times more biting insects than any of seven other products using the same attractants.

Even so, it wasn’t easy for the company to get a foot in the door with retailers. That was accomplished, says Richard Valentine, a major shareholder in American Biophysics and CEO of F1 entertainment, by dint of Ray lanetta’s personality: “He’s the kind of guy where if you tell him ‘no’ he hears it as ‘know’—meaning you are telling him that you need to know more.”

In 1999, lanetta cold-called Rick Salek, a VP of merchandising for Frontgate, the high-end catalog retailer regularly featured in *Skymall*, to tell him the pest products he was selling didn’t work. “Maybe I was naive, not coming from the consumer market,” lanetta chuckles today, “but ours is based on real scientific principle—knowing what the female mosquito, the one that

bites, is attracted to, how it flies. This other thing they were selling was just another gadget.” After sampling, Frontgate agreed to carry the Pro. Even at \$1,295, it sold well.

To meet the nascent demand, American Biophysics began outsourcing manufacturing, finding more space for assembly and inventory in Rhode Island, increasing its marketing efforts, and hiring aggressively. Then lanetta set his sights on Home Depot. Once again, he got in the door with a cold call—although the growing reputation of his product helped. The VP of merchandising at Home Depot knew someone who loved the Pro, and the buyer in charge of the garden category had seen it in pest-control trade publications.

“When they approached me with the business plan, I said, ‘It’s bugs? I’m not biting.’ And I threw it in the basket.”

Ray lanetta, American Biophysics CEO

lanetta packed his samples and boarded a plane for a product review in Nevada—only to miss his connection. Stranded in Chicago with no other flight to board, due to meet “the Depot” at 5 in Reno, he chartered a private Cessna, racking up \$16,000 on his personal credit card. On arrival, he realized crucial pieces of the samples were missing, stuck in the belly of a commercial airplane. But Home Depot was already convinced the product worked. What it didn’t know was, could a small company like American Biophysics offer something in the right price range? lanetta promised the Liberty model with a \$495 price tag. The chain’s buyers also asked if American Biophysics would refrain from selling to its competitors in the U.S.; lanetta quickly agreed.

For its part, Home Depot designated American Biophysics as its sole supplier of mosquito-attractive traps in 2002 and 2003. The chain also provides promotional support. “This new technology isn’t like a \$4 bug spray, but more like a lawnmower,” says John Fuller, global product merchant for Home Depot. “You have to know how to use it right, how to position it so that you don’t get between the mosquitoes and the trap and end up as their food source. We’re committed to solving our customers’ bug-bite problems, so we do a lot of in-store demonstrations, and often highlight the Mosquito Magnet in the sidebars of our catalog.”

By the end of the 2001 fiscal year, American Biophysics had achieved profitability with revenue surpassing \$23 million. The following year, revenue more than doubled. Today, the company sells three models: The Defender (\$295, half-acre coverage) and the Liberty (\$495, one-acre coverage) both come with 50-foot extension cords and require electrical power; the Pro (\$1,295, one-acre coverage) contains a mechanical power pack (not a chemical battery) and is freestanding. Each model requires the occasional replacement net and refills of propane and attractants, costing about \$15 monthly for the average U.S. consumer (while creating repeat sales opportunities for accessory retailers).

CFO Jeff Adam reports there are some 400,000 Mosquito Magnets in circulation. This past summer, 30-second commercials aired during CNN *Headline News*, *Trading Spaces*, and on the Weather Channel. The devices popped up at high-profile venues from Jones Beach to Pebble Beach. And through relationships with at least 50 dealers, American Biophysics now sells Magnets on every continent but Antarctica, where temperatures are too low for mosquitoes to survive.

LORA KOLODNY

THE WALL STREET JOURNAL.

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FRIDAY, JULY 20, 2001

WSJ.com

Splat! The New Bug Busters

As Mosquito Scares Spread,
Bug-Killing Goes High-Tech;
An \$800 Platinum Fly Trap?

By JUNE FLETCHER

Staff Reporter of THE WALL STREET JOURNAL

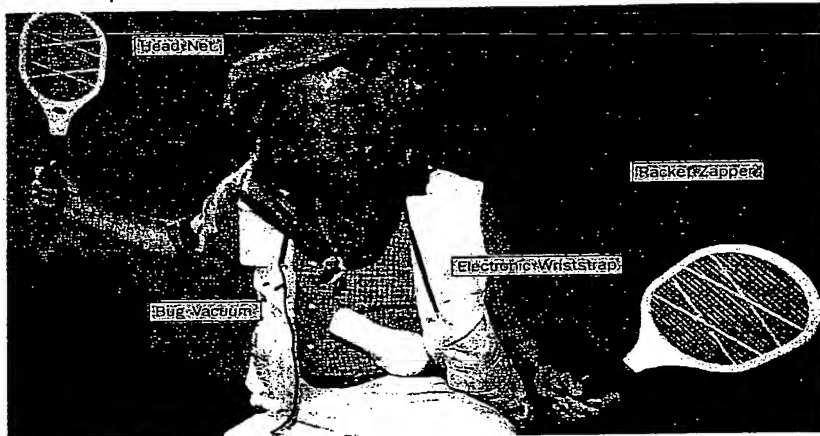
AS SOON AS VISITORS arrive at Alex Randall's Caribbean hideaway, he hands them small yellow racquets. But they aren't for tennis. They're battery-operated bug zappers with electrified "strings," used to whack the clouds of mosquitoes that infest his 1-acre home near St. Thomas. "If you accidentally hit yourself—ouch," says Mr. Randall, a radio announcer.

Forget the citronella candles and the flyswatter—this summer the war against mosquitoes has gone high-tech. From bug vacuums that look like

PLUS
Body count: We test the new bug killers. **W12**

laser swords to wristwatches that mimic the sound of a dragonfly's wings, gadget makers have been rolling out the heavy artillery. Perhaps the hottest thing on the market: an \$800 propane-powered gizmo called the Mosquito Magnet that supposedly emits the smell of animal breath to attract bugs. While spending on repellents is up a moderate 5.4% this year to \$112.4 million, gadget makers are reporting big increases: Lentek, maker of the bug vac, for instance, says sales have quadrupled over the same period last year.

Of course, the battle of the bugs isn't a new one. But it's gotten so high-tech—and so expen-



sive—for a simple reason: fear. The outbreak of the mosquito-borne West Nile virus two years ago spurred emergency spraying campaigns in the New York area. In Houston this year, in the wake of Tropical Storm Allison, as many as 100 of the bloodsuckers were landing on people per minute—raising the specter of encephalitis and other viral epidemics. Add in the wet spring in many parts of the country, which had mosquito

levels at record numbers—one St. Louis park known locally as Vampire Hollow had bug counts in late June four times their usual level—and you've got the makings of a real scare.

Almost universally, mosquito experts say this is a classic case of overreaction. "People are panicking, looking for new things," says Dan Kline, a U.S. government entomologist who gets 50

Please Turn to Page W12

Continued From Page W1
e-mails a day—up from that many a week—from mosquito-plagued homeowners. Most of the high-tech artillery is unnecessary, says Ulrich Benner, a federal entomologist in Gainesville, Fla. In the U.S., he says, "mosquitoes are more of a nuisance than a real threat of disease."

Try telling that to Tim and Bilynda Muldoon, whose mosquito-infested Harvard, Mass., yard was so bad "we couldn't even go outside," Mrs. Muldoon says. They tried everything—citronella candles and bracelets, even one of the devices that mimics the sound of dragonfly wings—before finally shelling out \$1,300 for a "professional" model Mosquito Magnet. By the third week, when they checked the trap, they found hundreds of tiny winged corpses. And, after investing in a second magnet, they were able to go outside again. "We still get a bite or two," Mrs. Muldoon says. "But at least I'm not the only mosquito magnet around."

As far as most people are concerned, bug technology reached its high point with those black-light bug zappers whose *zzzz...pop!* has punctuated many a backyard cocktail party. But in the past few years, the bug-fighting industry has gone into overdrive. Some of its biggest sellers are refashioned older products: The chemical that's used in smoky mosquito coils has been repackaged as the OFF! Mosquito Lamp (\$9), Lentek's \$15 Tomb or Schwab's ThermoCELL Mosquito Repellent (\$25). Then there's S.C. Johnson & Son's OFF! which now comes in a goopy, soapy-scented purple "Magicolor" version. Even those bug zap-

One woman swears by her new mosquito wristband. 'As silly as it looks, I wish I could wear it around my neck.'

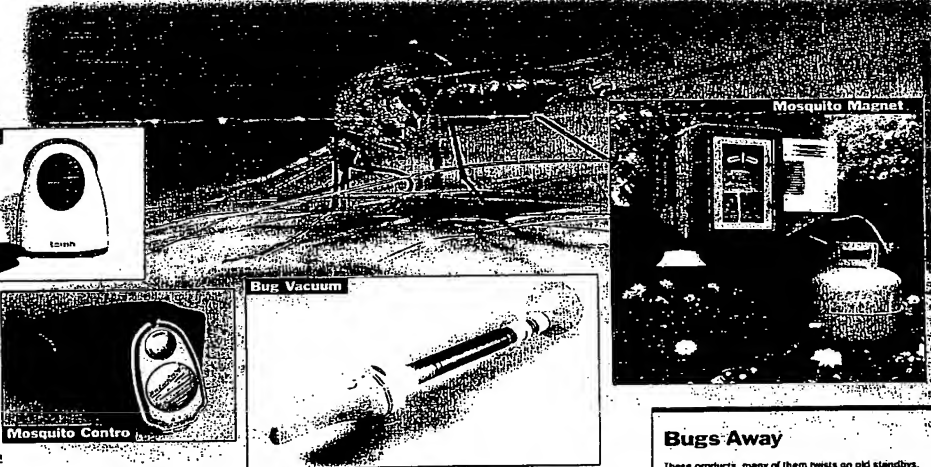
pers have been updated—these days, rather than (trying) mosquitoes, which explodes germs into the air, they drown them in water.

Dustbusters for Bugs

Also on the market: mosquito bracelets (some contain repellents, others use sound), mosquito vacuums (like Dustbusters for bugs) and Alex Randall's racquets. At the top of the tech heap, is the Mosquito Magnet, which works by converting propane into a plume of carbon dioxide, heat and humidity that draws bugs, which then get sucked into a net inside the machine. Ray Iannella, president of American Biophysics Corp., the East Greenwich, R.I., maker of the Magnet, says one reason his unit is so expensive is it uses 11 ounces of platinum in drive the chemical reaction.

Mary Haley, a Vienna, Va., homemaker, is sold on the new technology. Every time she goes out, she wears a \$6 lime-green plastic wristband from BugOff, whose active ingredients are that old-standby citronella, plus geraniol (a newly discovered compound that seems to make wearers invisible to mosquitoes) and lemongrass. "This keeps her arms bite-free, but not her face," as silly as it looks, I wish I could wear it around my neck," she says.

And after various commercial repellents—swarted as home remedies such as garlic and vine-



The Swat Team

Gadget makers have rolled out a new generation of bug-fighting products this summer. But do they work? To find out, we tested them in our own backyard, tallying the number of bugs caught. The results:

PRODUCT/PRICE	BUG COUNT	COMMENT
Alessi Flyswatter \$9.99 www.grasell.com	30 mosquitoes in an hour.	A contender, though your arm might give out. Not high-tech, but high-fashion, this is designed by Philippe Starck. It works like the plain old-fashioned ones.
Bug Eater \$65 www.walkeerworks.com	8 mosquitoes in 24 hours.	Lowest bug count. Rather than trying bugs like old zap-pers, which explodes germs into the air, this drowns them. Maker says it should be used in a contained space.
Bug Vacuum \$50 www.lentek.com	13 mosquitoes and two spiders in 3 hours.	Good, but requires you to be on the lookout for pests. Use a Dustbuster for bugs. To use, place the lip over the bug, push a button, and voosh!
Mosquito Magnet \$400/\$1,300 www.mcirongate.com	37 mosquitoes and hundreds of smaller bugs in 24 hours.	The winner, but the per-hour price is hefty. Attracts bugs, then traps them. We tested the more expensive "pro" model. Maker says it takes eight weeks to clear a yard.
Racquet Zapper \$5 www.pesdetour.com	7 mosquitoes and a fly in 10 minutes (then our arm got tired).	Good value on a per-bug basis. Strings carry a low-volt charge, powered by a battery in the handle. One plus: You can work on your backhand as you swat.

gar—failed to ward off the bugs on Terry Lee's back deck, she started relying on a flyswatter powered by her husband. But then he got sick of being the family bug-killer. "My husband said if I asked him to swat one more bug, he'd swat me," says Mrs. Lee, a retired nurse in Los Angeles. Now she swears by a \$50 Bug Vacuum whenever she sits out— "It's my magic wand," Mrs. Lee says.

But is any of this really worth it? Mr. Benner, the Florida entomologist, says the effectiveness of any product may depend on where you live—different mosquitoes may be more or less susceptible to different repellents and attractants. What they aren't susceptible to, says Harold Hartman, senior entomologist at the National Pest Management Association, an industry group, are gadgets that emit electrical

pulses, magnetic fields or sound, because all mosquitoes really care about is scent.

Lou Lentine, president of Lentek, maker of many such gadgets, says that the company does its own testing and that the products work. However, one outside group found in its tests that some electronic products reduced the bugs by only 35%, a "not significant" effect. "Wouldn't you call a 35% reduction in your salary significant?" Mr. Lentine counters.

Flying From Miles Away

Meanwhile, the pricey Almosquito Magnet gets high marks from bug experts, but even it has a downside: It may be too effective, attracting mosquitoes from miles away. "If they get in you first, you're dinner," Mr. Hartman says. Mr.

Bugs Away

These products, many of them twists on old standbys, promise to keep the bugs away. We tested them in our backyard, then counted bites. The results:

PRODUCT/PRICE	BITE COUNT	COMMENT
BugOff Wristband , Two for \$5 www.pesdetour.com	1 bite in 2 hours	Fairly effective. This colored wristband is impregnated with oil of citronella, lemongrass and geraniol.
Magicolor OFF! , \$5.95 Most drugstores	0 bites in 3 hours	The for first: The DEET-containing formula's not new, but the purple color is. It's aimed at kids and teens.
Mosquito Control \$18 www.pesdetour.com	2 bites in 3 hours	Most bites: This mimics a dragonfly. Some experts say it's a humbug. Maker says it's 85% effective.
Mosquito Hat \$5.50; \$9 large www.swatter.com	0 bites in 3 hours	The for first: It's definitely low-tech, but it's the one barrier even the hungriest bugs can't break through.
The Tomb \$15 www.lentek.com	1 bite in 3 hours	Fairly effective: Looks like a tomb, but it's the one pesticide as mosquito coils.

Kline, the government mosquito expert, has come up with his own low-tech version of the magnet: the smell is apparently nectar to mosquitoes (the smell is apparently carbon dioxide). "The neighbors looked at me strangely," Mr. Kline says. "But the mosquitoes really love that good food odor."

Some people find even that a little too much. Leonard Ladin, a retired chemist, exclaims "It's too dangerous!" and calls the various bug zappers he's tried "hopeless." Mr. Ladin's solution? A hat covered with mosquito netting that ties under his chin, which he wears with long-sleeved shirts, pants and gardening gloves while putting around the 28 flower beds on his Copake, N.Y., estate. "People laugh, but I never get bitten anymore," he says.

FEATURE REPORT

May 2003

Should you trap or zap?

• Ratings

A repellent may work on the person wearing it, but what if you want to ban mosquitoes from a whole area, so, say, they won't crash your backyard barbecue? Bug zappers, the ultraviolet-light devices that slay insects with a reassuring "zot!" are one option. In our tests, however, a zapper killed barely more mosquitoes than lodged on a nearby piece of sticky paper.

A newer choice: traps that lure and capture mosquitoes by mimicking mammals. The three widely sold traps we tested were not a cure-all. Although they were far more effective than the zapper at removing mosquitoes we released into a lab room, they didn't eliminate all of them. A species that carries West Nile virus was only moderately attracted.

In the end, we had to agree with Ray Parsons, director of mosquito control for Harris County, Texas, site of a large West Nile virus outbreak. "They do pull in lots of mosquitoes," Parsons told us, "but people shouldn't expect them to reduce the potential of disease transmission completely."

How they work. Traps mimic factors that make people irresistible to mosquitoes: exhalations, odors, body heat, or sound. Once they've lured the bugs—from a claimed area of 3/4 acre or 1 acre, depending on the model—they use either suction or sticky paper to capture them. The traps we tested must be plugged into an electrical outlet, and manufacturers advise using them around the clock during mosquito season, rain or shine.

The *American Biophysics Mosquito Magnet Liberty*, \$500, and the *Lentek Mosquito Trap MK01*, \$325, generate carbon dioxide and warmth by burning propane from a standard 20-pound tank that must be purchased separately. The *Magnet Liberty* also includes a cartridge of octenol, a chemical attractant said to smell—to a hungry mosquito, at least—like cow's breath. Both traps have fans that suck approaching mosquitoes into a mesh bag or cup, where they stay because they can't fly "upwind." (They then dehydrate and die.) The *Magnet Liberty's* fine-mesh bag should also capture no-see-ums and other tiny biting insects; the larger holes in the *Trap MK01's* cup or bag (both are included) may let some slip through. The *Applica SonicWeb ICH500*, \$300, has a small loudspeaker that generates the sound of a heartbeat. A plastic frame surrounding the speaker includes an electric heating element, a hook for hanging an octenol lure, and a cylinder that holds a sticky paper sleeve that captures mosquitoes only if they land on it.

How we tested. We released a couple thousand mosquitoes into a 25-by-30-foot sealed room with a trap at one end. About half were *Culex quinquefasciatus*, a species that has helped spread West Nile virus into the southern U.S. (*Culex pipiens*, a close relative with almost identical habits, is mainly to blame for the outbreak in the North.) The rest were *Aedes aegypti*, a common southern species that's especially tenacious in its pursuit of people.

We ran each trap for 20 hours, half of that time in the dark, then recorded the number and species of mosquitoes caught in each device.

How they performed. Within minutes of entering the test chamber, swarms of mosquitoes

clustered around the *Magnet Liberty* and *Mosquito Trap MK01*. Some mosquitoes swarmed near the *SonicWeb*, but many perched on its frame instead of landing on the sticky sleeve.

By the end of its 20 hours, the *Magnet Liberty* had caught about three-fourths of the mosquitoes; so had the *Trap MK01*. The *SonicWeb* had trapped only about one-fourth. The bug zapper killed far fewer, even though it provided the only light in the room during our simulated night. All three traps caught about twice as many *Aedes* mosquitoes as *Culex*. That's probably because *Aedes* are highly aggressive and like to bite the mammals that the machines impersonate. *Culex* are less aggressive and prefer birds.

In general, the more traps in a neighborhood and the more strategic their placement (between a swamp and a backyard, say), the more effective the control.

How easy they are to use. To avoid luring mosquitoes to people, you're supposed to put traps far from areas where people gather. You may need several long extension cords, which can be inconvenient. The *Magnet Liberty* and *Trap MK01* must be placed so the prevailing breeze carries the gas plume across the yard. Because of their use of electricity, propane, or chemicals, all the traps must be used only outdoors and should be placed where children are unlikely to touch them.

The *Magnet Liberty* and *Trap MK01* look like robot brothers, but the shorter *Magnet Liberty* is easier to use. It nestles inside a compact, stable metal frame that can be wheeled with little effort. It has electronic controls and ignition, and its fan is barely audible from a few feet away. The *Trap MK01* is top-heavy and has no wheels, so it's hard to move. You ignite it with a match or lighter, and its fan is as loud as an air conditioner, though that shouldn't be distracting when the device is placed as recommended.

The *SonicWeb* is a cinch to set up: Hang the octenol lure, pop on the sticky paper sleeve, and plug it in. Its thumping "heartbeat" is quieter than the *Trap MK01*'s fan. But again, in our tests, the *SonicWeb* was much less effective than the others.

Recommendations. Our tests were conducted in a lab, not outdoors. Still, they indicate that if traps are continuously operated under the right circumstances, they can reduce the number of mosquitoes in your yard. Our top choice, the *Mosquito Magnet Liberty*, \$500, performed well and was easy to use.

Traps are expensive. After paying hundreds of dollars for the device itself, you'll pay \$20 to \$25 a month for electricity and components such as propane, octenol lures, and sticky paper. And traps are unlikely to prevent all bites. Therefore, consider low-tech approaches first: Apply repellent, wear protective clothing, and eliminate mosquito-breeding habitats in and near your yard.

This article was also published in *Consumer Reports* magazine.

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09/01/01

The *American Biophysics Mosquito Magnet Liberty*, \$500, and the *LenTek Mosquito Trap MK01*, \$325, generate carbon dioxide and warmth by burning propane from a standard 20-pound tank that must be purchased separately. The *Magnet Liberty* also includes a cartridge of octenol, a chemical attractant said to smell—to a hungry mosquito, at least—like cow's breath. Both traps have fans that suck approaching mosquitoes into a mesh bag or cup, where they stay because they can't fly "upwind." (They then dehydrate and die.) The *Magnet Liberty*'s fine-mesh bag should also capture no-see-ums and other tiny biting insects; the larger holes in the *Trap MK01*'s cup or bag (both are included) may let some slip through. The *Applica SonicWeb ICH500*, \$300, has a small loudspeaker that generates the sound of a heartbeat. A plastic frame surrounding the speaker includes an electric heating element, a hook for hanging an octenol lure, and a cylinder that holds a sticky paper sleeve that captures mosquitoes only if they land on it.

How we tested. We released a couple thousand mosquitoes into a 25-by-30-foot sealed room with a trap at one end. About half were *Culex quinquefasciatus*, a species that has helped spread West Nile virus into the southern U.S. (*Culex pipiens*, a close relative with almost identical habits, is mainly to blame for the outbreak in the North.) The rest were *Aedes aegypti*, a common southern species that's especially tenacious in its pursuit of people.

By the end of its 20 hours, the *Magnet Liberty* had caught about three-fourths of the mosquitoes; so had the *Trap MK01*. The *SonicWeb* had trapped only about one-fourth. The bug zapper killed far fewer, even though it provided the only light in the room during our simulated night. All three traps caught about twice as many *Aedes* mosquitoes as *Culex*. That's probably because *Aedes* are highly aggressive and like to bite the mammals that the machines impersonate. *Culex* are less aggressive and prefer birds.

The *Magnet Liberty* and *Trap MK01* look like robot brothers, but the shorter *Magnet Liberty* is easier to use: It nestles inside a compact, stable metal frame that can be wheeled with little effort. It has electronic controls and ignition, and its fan is barely audible from a few feet away. The *Trap MK01* is top-heavy and has no wheels, so it's hard to move. You ignite it with a match or lighter, and its fan is as loud as an air conditioner, though that shouldn't be distracting when the device is placed as recommended.

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Comment: The LenTek is a clear patent infringer.

Comment: We catch no-see-ums, the competitors don't.

Comment: See email from Dr. Alan Wheeler Cayman Islands Biological Research & Mosquito Control. He states our traps cleared the island of *Aedes aegypti*.

Comment: Easier to use.

Comment: Mosquito Magnet is quiet and easy to move. Competitor (LenTek) is top heavy, loud, and hard to move.

Comment: This is a stunning recommendation according to an 18 year GE/Black & Decker veteran.

The Boston Globe Business

THE BOSTON GLOBE FRIDAY, JULY 6, 2001

This business needs buzz to survive

Its backers say the Magnet really kills mosquitoes

By Chris Reidy
GLOBE STAFF

EAST GREENWICH, R.I. — Forget bug zappers and pesticides this summer. And don't be fooled by machines that claim to kill mosquitoes with sound waves.

At American Biophysics Corp., chief executive Raymond Iannetta touts his company's \$795 Mosquito Magnet. It's everything you could want for making al fresco dining bug-free, he said.

Not only does the Mosquito Magnet create a half-acre DMZ around backyard cookouts and barbecues, its makers claim; it also kills mosquitoes in an environmentally correct manner. Translation: No pesticides are used. Victims die, often a thousand at a time, from dehydration.

After about two years on the market, the Mosquito Magnet hasn't persuaded all the skeptics, but it has won many fans.

One true believer is Tim Muldoon, a software architect for Fidelity Investments. A few years ago, he and his wife, Bilynda, bought a house in Harvard near some wetlands.

When they moved in at winter's end, the house seemed ideal, but in the summer, swarms of mosquitoes chased them from their backyard. So the couple installed two Mosquito Magnets, the deluxe models that today sell for \$1,295 apiece.

Said Tim Muldoon, "Now I can walk around my rose bushes buck naked at dusk."

One challenge for American Biophysics is that no independent research group has evaluated its product, so its sales pitch relies on strictly anecdotal evidence.

Iannetta has plenty of anecdotes. For example, New York City's Department of Environmental Protection has bought more than 100 units for use at sewage-treatment facilities, a fact confirmed by a department spokesman.

Another anecdote: In bug-infested Florida, where the exterminator is revered, there have been recent reports of stolen Mosquito Magnets, Iannetta noted gleefully.

Anecdotal evidence doesn't mean much to a scientist, though. Scientists want objective analysis, especially since so many bug-killing devices have turned out to be pure hype.

"Most of them don't work at all; they're hocus-pocus," said Andrew Spielman, professor of tropical public health at the Harvard School of Public Health.

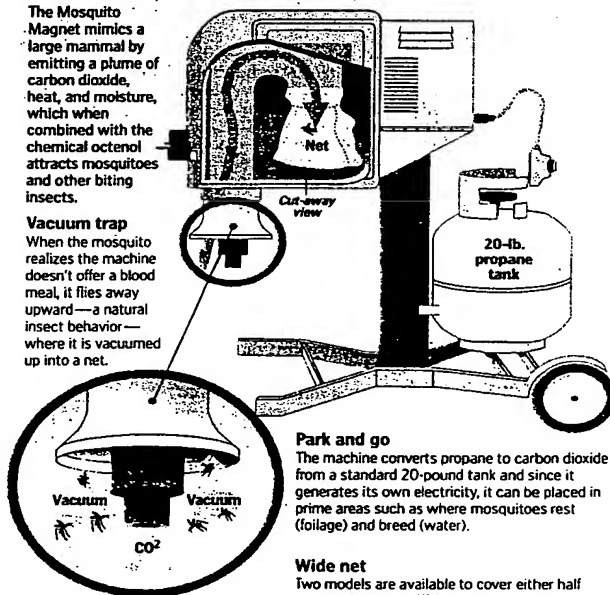
Said Iannetta, "That's our biggest problem, overcoming the gimmick-and-gadget syndrome."

The Mosquito Magnet wasn't

Outdoors bite-free

The Mosquito Magnet mimics a large mammal by emitting a plume of carbon dioxide, heat, and moisture, which when combined with the chemical octenol attracts mosquitoes and other biting insects.

Vacuum trap
When the mosquito realizes the machine doesn't offer a blood meal, it flies away upward—a natural insect behavior—where it is vacuumed up into a net.



Park and go

The machine converts propane to carbon dioxide from a standard 20-pound tank and since it generates its own electricity, it can be placed in prime areas such as where mosquitoes rest (follage) and breed (water).

Wide net

Two models are available to cover either half an acre or an acre. Efficiency may vary on wind conditions and levels of infestation.

SOURCE: Mosquito Magnet

GLOBE STAFF GRAPHIC/ALEJANDRO GONZALEZ



GLOBE STAFF PHOTO / JONATHAN WIGGS

"No one believed us. All they said was, 'Yeah, yeah, bug traps. . .'"

RAYMOND IANNETTA, CEO of American Biophysics

American Biophysics' original business. When the company was launched a decade ago, its focus was on making mosquito traps that customers such as the US Department of Agriculture use to determine the

presence of diseases and viruses carried by biting insects.

Under research director Bruce E. Wigton, the company studied the mosquito's nervous system and how carbon dioxide excites female mosquitoes when they are searching for a blood meal. (Male mosquitoes don't bite humans.)

To a female mosquito, carbon dioxide means a large mammal is nearby. Expose a mosquito to carbon dioxide, and she'll react a bit like a shark smelling blood in the water.

Company scientists also researched mosquito flying habits and navigational skills. Dipping mosquitoes into phosphorescent dyes before releasing them, scientists with night-vision goggles learned that mosquitoes invariably gain altitude when they turn.

Such information proved useful when American Biophysics set out to design the Mosquito Magnet about five years ago.

In its current form, the device looks a bit like a cooking grill. It comes on wheels, and it uses a 20-pound propane tank to fuel a chemical reaction that emits a plume of carbon dioxide that hovers 18 inches off the ground; 20 pounds of propane, which costs about \$12, will keep a Mosquito Magnet in continuous operation for about three weeks, Iannetta said.

Fans abuzz about Mosquito Magnet

► MOSQUITOES
Continued from Page E1

Traditional mosquito traps, by contrast, use dry ice to create the carbon dioxide that acts as bait. The ice has to be replaced frequently, making them impractical for consumers.

According to American Biophysics, mosquitoes rarely travel far from their home base. And because they can double their weight after gorging on blood, mosquitoes fly into the wind when they seek food; that way, bloated bugs can glide home with the help of a tail wind, Iannetta said.

The Mosquito Magnet takes such behavior into account.

When mosquitoes realize there's no mammal at the end of the carbon-dioxide plume that serves as bait, they veer upward to begin a new hunting pattern. That change of course takes them within range of the Mosquito Magnet's propane-powered vacuum.

Mosquitoes are then sucked inside the machine and trapped in a net where they die from dehydration in about 24 hours.

With no extension cords to limit its range, the portable and self-powered Mosquito Magnet can be strategically placed in the aerial traffic patterns that mosquitoes fly at dawn and dusk.

While initial casualty rates are often high, it takes four to six weeks of continuous operation to virtually eliminate a local mosquito population from a backyard,

Iannetta said. His product kills many blood-feeding insects besides mosquitoes, he said, including black flies and biting midges, which are also known as no-see-ums.

No-see-ums abound in Florida, where the company did much of its product testing. At one wealthy retirement community, residents were so impressed that they not only bought Mosquito Magnets by the score but invested a chunk of the \$11 million that American Biophysics needed to finance development.

"Our customers became our investors," Iannetta said.

Lining up retailers and a sales force to sell the Mosquito Magnet was a far more difficult task.

"No one believed us," Iannetta said. "All they said was, 'Yeah, yeah, bug traps. . . .'"

At first, sales came in ones and twos. A consumer would buy one and then a neighbor would buy one, too. Helped by word of mouth, privately owned American Biophysics had sales of \$6 million in 2000, it said. It projects \$25 million in sales this year and \$50 million in 2002, Iannetta said.

Over time, the product has gained converts. An upscale catalog called Frontgate now sells the Mosquito Magnet, and many hardware stores are beginning to stock the item.

American Biophysics, which employs about 100 workers, sees big future opportunities in such

tropical countries as Indonesia and Brazil. Military bases, theme parks, zoos, outdoor restaurants — all are potential customers, Iannetta said.

As director of the mosquito-testing lab for the Massachusetts Department of Public Health, Ralph Timperi knows all about the hardiness of mosquitoes — but wonders how many Bay State consumers actually need an expensive mosquito-killing device.

During their brief lives, mosquitoes reproduce exponentially, especially during rainy summers like this one. As fast as one population is killed off, a new one materializes, so keeping mosquitoes in check is a constant battle, he said.

His advice to consumers? Use common sense and cheap repellent.

Muldoon, the Harvard homeowner, tried cheap repellent and just about everything else to reclaim his yard.

"Bug lights, zappers — they didn't do much," he said.

He jokingly credits Mosquito Magnets with having saved his marriage.

"My wife was ready to abandon ship," Muldoon said. "If we didn't have them, I'd either be divorced or moving back to Arlington."

Chris Reidy can be reached by e-mail at reidy@globe.com.

FATAL ATTRACTION



AL DIAZ/HERALD STAFF

BUG OFF! At the Mosquito Magnet Depot in Key Largo, Deborah Corrao, director of sales, deals with the pesky insect daily.

Latest in the
mosquito wars?
A machine that
mesmerizes the
skeeters with
scent, then
sucks them up
like a vacuum.

BY GEORGIA TASKER
gtasker@herald.com

The buzzing isn't just in your head, it's the white noise of South Florida's mosquito season.

It may be the one time of the year when you pray to be doused by chemicals dropped from planes. You can't go near the patio unless there's a southeasterly wind blowing. And working in the garden means welt city (scratching bites on your knuckles is the worst).

Now, there's a not-so-secret device being used by the U.S. Coast Guard, the rangers at Everglades National Park and folks who run restaurants, resorts and an array of establishments in the Great Outdoors.

It's called the Mosquito Magnet, and it's selling like local brew in a Key West pub.

The Mosquito Magnet attracts 'em and zaps 'em. It lures them and dehydrates them.

It costs between \$495 and \$1,295, but no one seems to mind. After all, government efforts to control the pests cost Florida about \$88 million each year, and jump to \$400 million nationwide.

Miamian Fred Herman, who works in his open-air boat shop, has a Mosquito Magnet running just outside. And while

These repellents work best

Hikers know that Deep Woods OFF is the mosquito spray of choice.

So does the New England Journal of Medicine, which last year published a study about the most effective repellents. DEET, which was developed for the U.S. Army, is the chemical in Deep Woods that kills skeeters.

A number of products use DEET, including Cutter's Skinsations with 6.65 percent DEET, and Sawyer Controlled Release with 20 percent DEET. Deep Woods contains 25 percent DEET.

Least effective? Lemon-scented geraniums, which for years have been touted as mosquito repellents, and wristbands that contain either citronella or DEET. (Repellent works best when applied directly to the skin or clothing.)

Citronella candles can keep mosquitoes at bay — but so can regular candles. Or the barbecue grill. Skin-So-Soft from Avon will do the trick for about 20 minutes, and citronella oils also are effective only briefly.

— GEORGIA TASKER

► PLEASE SEE MAGNET, 2C

Mosquito Magnet: Device lures, kills

► MAGNET, FROM 1C

it's near his horses — also prone to mosquito bites — he purchased the machine to protect himself.

"I bought the machine for me," he says.

Naples restaurant owner Vin DiPasquale, who has waterfront eateries at Tin City and Crayton Cove, has posted mosquito machines outside both of his operations. He bought them last year.

"We're catching lots of mosquitoes," DiPasquale said. "If you locate them strategically, they work fine."

Deborah Nordeen, assistant public affairs officer at Everglades National Park, says the park began using the Mosquito Magnets last summer, and several are scattered through the park.

"We have one at the main park entrance, and it works pretty well there," Nordeen said. "And we have about 16 in the Flamingo area. Surrounded by mosquitoes' breeding habitat, they take out a lot of mosquitoes, but the void is pretty quickly filled."

The Flamingo machines have their large mesh bags emptied every day. Rangers have calculated each bag contains about 225,000 mosquitoes, Nordeen said.

The Magnet is made by American Biophysics, a Rhode Island company. The company's only product, it was introduced in 1999.

Ray Iannetta, president and CEO, says mosquitoes are attracted to carbon dioxide, which is what animals (humans included) exhale. When you add a substance called octenol — which Iannetta describes as a byproduct of the digestive system of grazing animals — the attraction is even greater for mosquitoes.

So the Mosquito Magnet blows out a stream of carbon dioxide, catalytically converted from platinum and propane, and sucks in mosquitoes when they get within six inches of the vacuum. In the largest machine, called the Pro, the vacuum is powered by propane. Smaller models, which Iannetta says could protect a 10-by-10-foot patio, use electricity.

By running the machine around the clock, Iannetta says, the user can catch daytime biters such as saltmarsh mosquitoes, no-see-ums and Asian tiger mosquitoes, as well as the vast majority of mosquitoes, which are active at dawn, dusk and night.

The company's scientists are working to map mosquitoes throughout the United States and come up with traps for specific species. Florida alone has about 75 kinds of mosquitoes.

The scientists also are isolating different compounds given off by human skin (they've detected 330 so far) to make a range of mosquito-attracting substances.

Donovan Smith, whose 35 wooded acres in East Naples is near Alligator Alley, has five machines going to keep skeeters away from his exotic animals. He hires out chimps, lions, leopards — even giraffes — for parties and educational tours.

The Mosquito Magnets "are not a cure-all, but they substantially eliminate a major number of mosquitoes," Smith said. "When they first hatch,

Not a biting chance

A stream of carbon dioxide draws mosquitoes to the Mosquito Magnet. When the insects get within inches of the vacuum, it sucks them in.



MOL072202

MARCO A. RUIZ / HERALD STAFF



MAN AND BEAST: Though it's near his horses, Fred Herman bought his Mosquito Magnet to protect himself in his open-air boat shop.

you'll be bitten by some, and it takes the magnets a couple of days to catch up."

Smith has a female leopard that's allergic to mosquito bites, and until he set up a Mosquito Magnet near her enclosure last year, he had to give the cat about 10 cortisone shots a year. Now, he gives her one.

"I've spent a fortune in the past [on mosquito repellents]. Everybody's bought a bug light that didn't work. But even the smallest [Mosquito Magnet] is still better than anything out there."

In Key Largo, 2,500 units have been sold since January at the Mosquito Magnet Depot, just past Mile Marker 103 on the bay side. Frank DiRico, a customer so enamored with the product he became an investor, opened the store in October 2000.

DiRico calls the machines "revolutionary" and tells of running into his Key Largo house from his car and his boat in mosquito season before he got the machines. He now has three magnets around his house.

Ordinary things can be nurseries for hatchlings

BY GEORGIA TASKER

gtasker@herald.com

Bromeliads can collect whole ecosystems of critters in their rain-filled cups, and gardeners know mosquitoes are a part of that soup.

If you flush the plants with a hose every few days, the larvae will die. Or, you can pour a horticultural oil into the bromeliad cup, creating a film that prevents mosquitoes from hatching.

Mosquito Dunks, available at most hardware and garden stores, contains a bacteria (*Bacillus thuringiensis israelensis*) that kills mosquito larvae. Break up a tablet and place little pieces in the bromeliad cup.

Bromeliads aren't the only place where mosquitoes breed. Birdbaths, flower pots, buckets, uncovered garbage cans and other water-holding containers should be emptied of standing water, as they're potential nurseries for mosquitoes. Don't forget the saucers that go under plant containers. Turn them over when you store them.

If outside between dusk and dawn, wear long-sleeved shirts, long pants and shoes with socks. And use a mosquito repellent.

The biggest benefit, he says, may be in developing countries where malaria, dengue fever and other mosquito-borne diseases are on the rise.

Herman, who works in the boat shop, says that when mosquitoes are at their peak at this time of year, his single magnet works — to a degree.

"It does get mosquitoes in a restricted area," he said. "Due to the fact that we have a lot of foliage, it only gets an area within 50 feet around the unit itself. Right now, I'd have to have about 50 to get the full benefit."

The Washington Post

Why Mosquitoes?

Skeeter Cheater: Summer's Cool Tool

Can Lure Them In
And Suck Them Up:
Is It Safe to Go
Back in Back Yard?

By ANN GERHART
Washington Post Staff Writer

A perfect summer evening, the chilled sauvignon blanc, perhaps gentle waves lapping against a wooden hull, and then... here comes the insistent thin whine of the advancing invader. She deftly inserts her proboscis into your skin. An annoyance, a burn, a sting. *Smack!* Even in the dusk, you can see the scarlet residue. Your blood? Or the prior victim's?

The rest of the world has mosquito netting. Here in America we take comfort in technology.

And so, this bulletin from the Office of Backyard Security: There is a promising smart bomb for mosquito control, manufactured by the impressively named

American Biophysics Corp. It costs up to \$1,295, and of course you can order it online. Every summer, there is a product essential in commercial or industrial applications that the wealthy class adopts for leisure use. Last year it was the \$2,500 stainless-steel gas grill. This year it is the Mosquito Magnet.

In a nation gripped by terror, it promises to keep the house in order. In the past few years, despite their hefty price tag, more than 150,000 of the mosquito-killing machines have been sold from Alaska to Florida, Africa to the Caribbean. This summer, sales are up 400 percent for the machine, according to Ray Iannetta, the president and CEO of American Biophysics, which makes only this one product.

Mary Dufour bought the \$495 model for her "teeny-teeny" gem of a garden in Arlington, with its lovely goldfish pond, where she would sit and slap and reflect on mosquitoes. "I try to think about what is their purpose, like, 'C'mon, God, why?'" She set up her

See SKEETERS, F3, Col. 1

MOSQUITO PHOTO BY ROBERT F. BURATTI—ASSOCIATED PRESS

SKEETERS, From F1

green machine at the beginning of June and this week conducted her own experiment. Across the street, skeeters attacked her in her neighbor's yard "probably 10 times in a minute." Back home, where the machine was quietly humming along on its 24-7 duty, she got two bites in a couple of hours.

Originally made as a surveillance trap for the mosquito control professionals who monitor the location and number of the pests in order to kill them, the Mosquito Magnet attempts to crash the bug population by luring female mosquitoes toward what they think will be a blood meal. When they draw near, the machine vacuums them into a bag where they suffocate. After six or eight weeks, absent the females, who suck blood to provide protein to their eggs, the population dwindles.

The machine uses platinum beads to catalytically convert propane gas into carbon dioxide, which mimics the exhalations of humans and other large mammals. The CO₂ mingles in a plume with heat, octanol attractant and moisture. As the females reach the machine's tube, they realize, because they are frighteningly smart little buggers, they are about to be cheated out of their blood meal. Instinctively, they turn upwards and try to move on, but the vacuum sucks them to their dehydrating demise.

The U.S. Coast Guard used Mosquito Magnets to reclaim its uninhabitable Bahamian station, and six of the contraptions captured 1.5 million mosquitoes in six days, according to the manufacturer. But some experts, those folks who subscribe to the Journal of the American Mosquito Control Association, aren't so sure.

"We don't endorse it. We don't think there's enough data," says Cyrus Lesser, chief of mosquito control for Maryland, which has led the nation in cases of mosquito-borne West Nile virus in birds. "If you wind up with tons of mosquitoes in the trap, it just means you had a lot of mosquitoes to begin with. I've visited sites and looked at the traps and been bitten on the way to the trap and right next to the trap.

"Pest perception," says Lesser. "It's all about pest perception."

The only good mosquito is a dead mosquito.

Probably 65 million years old and hardy as the devil, mosquitoes are all take, take, take. They suck blood, leaving nothing behind but welts and a trail of miserable death. Evolutionary scientists have studied them for years to determine what use the insects have in the Big Scheme of Things. The answer: None. Or perhaps this: "To teach us humility," suggests Rick Wilkerson, an entomologist at the Walter Reed Army Institute of Research.

Worldwide, homicidal mosquitoes claim more than a million victims a year to malaria alone; another 300 to 500 million fall ill but recover. Then there are encephalitis and dengue fever, which people in the tropics call "broken-bone disease" because the victim feels as if every bone in his body

has been broken. Dengue fever afflicted some 400,000 people in Brazil last year. And now there's West Nile virus, a spreading threat in the United States. Discovered in this hemisphere only in 1999, it is known to have killed 18 people so far.

Back in the '60s, before we were so terrified of everything around us, when teenagers baked for days under the hot swimming pool sun and all the moms smoked and additives were wonder substances, not carcinogens, there was a truck called the Skeeter Beater. It would roll slowly through the streets of Levittown, Pa., and all the kids would tear out of all the houses and chase the Skeeter Beater down the street, playing and laughing in the thick and noxious cloud of pesticides.

Chemicals have a bad name now. People are afraid of pesticides, when they should be afraid of mosquitoes. They prefer to slather themselves with botanical repellents instead of DEET, the proven chemical bug slayer. Meanwhile, they refuse to patrol their grounds for standing water, which is what mosquitoes need to hatch their eggs. They won't clean their gutters or empty the water out of their trash can lids or flowerpot saucers. They won't flush their birdbaths or dump out their kids' wading pools.

The environmentalists among them do quaint things like put up bat houses and condos for purple martins.

"Bats have really good press agents for promoting them for mosquito control, but they are not very effective," says Lesser. They prefer moths and can spread rabies. Neither are the purple martins huge skeeter eaters. One of the more pestiferous facts about mosquitoes is that they are not any predator's primary source of food. They exist as a sort of snack. Fish can be heavy snackers. Without the fish, says Lesser, "you wouldn't need to build a bridge to the Eastern Shore, because nobody would want to go there."

They are frighteningly adaptable. In one of those environmentally friendly maneuvers that went horribly wrong, the vicious Asian tiger mosquito traveled to this country in the mid-'80s inside shipments of tires imported for recycling, because Asian tires have higher rubber content. By the time the Centers for Disease Control and Prevention knew manufacturers were inadvertently importing exotic pests and took quarantine measures, it was too late. Now, in an extraordinarily efficient colonization, *Aedes albopictus*, with its distinctive white and silver stripes, swarms through nearly every state.

They are very aggressive and painful biters, and most people have severe itching and swelling for several days," Lesser says. They won't wait for night, but dive for the ankles in broad daylight. Worse, last year the Asian tigers were discovered to be fine spreaders of West Nile virus, adding to an already impressive list of diseases—dengue, eastern equine encephalitis and dog heartworm, and potentially St. Louis and La Crosse encephalitis.

Mosquitoes don't fight fair. They prey on the still, and the sleeping. There is something enraging and satisfying about killing a mosquito, and thinking that the red smear on the wall may be made up of your own stolen platelets and plasma.

Sometimes they have accomplices. The knock comes at the door. It's the friendly mosquito control man, offering some educational tips about the standing water that breeds the mosquitoes traveling to the neighbors' yards. "And the person says, 'That's good. I don't like my neighbors,'" says Lesser. "There are sociopaths in all walks of society."

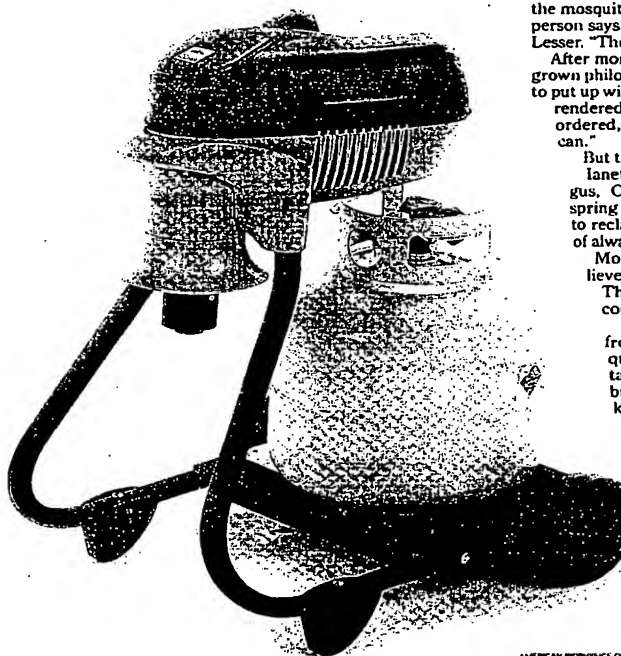
After more than 30 years fighting the killer bugs, he has grown philosophical. "It has to do with what you are willing to put up with," he says. "I personally have given up and surrendered to the theory of chaos. Everything is unordered, and you just try to get through the best you can."

But that man is not Ray Iannetta's customer. Iannetta's customer is a man like Rick Young, of Angus, Ontario, who wrote this testimonial: "In the spring of 2001, I told my wife, 'I'm going to find a way to reclaim our property. This was war, and I was tired of always being a prisoner in my own house.'"

Mosquito Magnet owners are people who still believe terror can be controlled by precision killing. They measure their satisfaction in enemy body count. All casualties are more than acceptable.

"You know one of the funniest things we hear from our customers? We put the [trapped] mosquitoes in a net so you can see them," says Iannetta, "and people complained the window wasn't big enough. They like to go out at night. They keep a flashlight on the table. They go outside and see how many they've caught. They love seeing them, clinging to the net, suffocating."

More than 150,000 Mosquito Magnets have been sold in the past few years, despite their hefty price tag. This summer, sales are up 400 percent for the machine.



AMERICAN BIOPHYSICS CORP.

THURSDAY, JULY 18, 2002

The Buzz About Mosquito Trappers

By ADAM HIGGINS
Washington Post Staff Writer

Bug scientists studying mosquitoes have used devices for years to lure the maddening, blood-sucking insects. The main attractant was dry ice—which produces carbon dioxide, the same gas found in human breath.

A group of scientists and entrepreneurs at an East Greenwich, R.I., company figured that if someone could adapt these research instruments to lure and kill mosquitoes in back yards, consumer demand would be phenomenal. Three years ago, the company, American Biophysics Corp., introduced its first model. Since then, the device has been attracting more than just a swarm of skeptics.

The company essentially created a new consumer category, which is now growing at 400 percent a year according to the head of American Biophysics, and drawing widespread media coverage. The marketplace is becoming crowded with similar traps in a wide range of prices, promising to rid our yards and gardens of the irritating and potentially dangerous parasites.

Most of these devices, functioning rather like sacrificial robots, seek to mimic human beings by emitting plumes of carbon dioxide, heat and compounds found in human (and human) breath. One product even re-creates the sound of a beating heart. "People are very skeptical of any mosquito-abatement product," said Juliana Lear, spokeswoman for American Biophysics. "People have been burned by zappers and citronella plants."

The products are confusing, the claims ambitious, and there is little in-

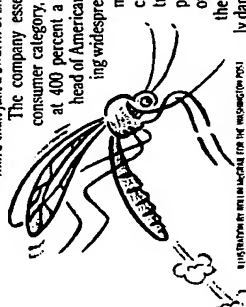


ILLUSTRATION BY PAUL MAGNALL FOR THE WASHINGTON POST

GARDENS

A Myriad of Mosquito Traps

MOSQUITOES. From Page 1

dependent research to guide the consumer. But with the contraptions typically costing several hundred dollars—and up—it seems reasonable to ask: Do they work?

"These devices will trap and kill measurable numbers of mosquitoes," says the nonprofit American Mosquito Control Association. "Whether this will produce a noticeable reduction in the mosquito population in your case will depend."

The association, based in Eatontown, N.J., urges consumers not to expect miracles. "Please be cautioned against putting too much faith in traps as your sole means of control," states its Web site, www.mosquito.org.

Alan Kerbey, owner Specialty Chemical Applications, a pest control company in bug-infested South Texas and has evaluated the array of new devices. His take: They work, some much better than others, but none will completely eradicate the insect. "The consumer is totally confused: These companies have Web sites promising to eliminate mosquitoes in your yard forever. It's just not happening, and a lot of people are disappointed," he said.

For decades, the battle for your yard in summer came down to chemical warfare—spreading DEET on your skin, burning citronella, logging the air with pesticides. The notion of a clean, high-tech and remote trap has captured the public imagination, and manufacturers are looking to the day soon when these electronic offerings are as common as gas grills, they resemble.

The demand has been boosted by fears surrounding the spread of the West Nile virus and other mosquito-borne illnesses, which can be fatal to people with weakened immune systems.

Alexandria health officials announced last week that two dead crows tested positive for the West Nile virus. They recorded 70 bird deaths from mosquitoes last year.

This summer, the consumer will find a number of electronic mosquito-killers, both online and in hardware and home product stores. Check Web sites for more information.



ILLUSTRATION BY PAUL MAGNALL FOR THE WASHINGTON POST

American Biophysics sells two commercial-grade products, the Mosquito Magnet Pro (\$1,295) and the Freedom (\$795). This year, the company introduced the Liberty at \$495, designed specifically for back yards. It relies on a 12-watt power cord to run the fan that sucks in the mosquitoes to a bag, where they dehydrate and die. The other two generate their own electricity and can be used in remote places like golf courses. The company says the range of the Pro model is up to an acre—the other two are designed to lure and trap mosquitoes over an area up to three-quarters of an acre.

All three use octenol and standard propane gas tanks with catalytic converters to change the propane into carbon dioxide (www.mosquitomagnet.com).

Dragonfly Mosquito System, by BioSensory Inc. of Williamstown, Conn. The company sells the Dragonfly, which also emits heat and octenol but delivers its carbon dioxide directly, and advises using it with two of its "Mosquito Cognito" devices, which emit a chemical named Conceal to mask human smells. The system costs \$795, but the addition of a portable stand and CO₂ tank increases the price to \$992 (www.biosensory.com).

Mosquito PowerTrap, by Flowtron Outdoor Products, a division of Armatron International Inc. of Melrose, Mass. This device has the same basic features as the Mosquito Magnet Liberty and lists for \$369 to \$399 (www.mosquitopowertrap.com).

American Biophysics last year sued Armatron in U.S. District Court claiming patent infringements. Armatron has denied the allegations. The suit has been stayed pending a reexamination of the companies' various patents.

Mosquito Deleto, made by the Coleman Co. of Wichita, Kan. The Back Home model runs off a standard propane tank or a camp-stove-type propane canister and sells for \$249.99. The manufacturer recommends use of a repellent device called Inhibitor, which costs \$22.95. (On Monday, the Consumer Product Safety Commission

announced a voluntary recall of 136,000 Mosquito Deleto sold since March because of reports of propane leaks that could pose a fire hazard. Customers can call 800-257-5299 or log on to www.coleman.com.)

SonicWeb, by Aplica Consumer Products Inc. of Shelton Conn. It uses heat, visual attractants, octenol and the sound of a heartbeat to lure the insects, which are then caught on sticky paper. It sells for \$299.95 (www.sonicweb.com).

Mosquito Trap by Lenteck International Inc., based in Orlando. The trap converts propane into moisture and carbon dioxide to help attract mosquitoes. It also incorporates heat, color, air flow and special attractant blue light to lure and capture mosquitoes more effectively. It lists for \$299.99. Lenteck also has a repellent device called Blue Shield, which uses the aroma of a natural oil called geraniol, extracted from lemongrass, primarily. In repel biting insects, for \$19.99.

trapped as many as 22,443 biting insects per night during an eight-day trial in Florida.

Kerbey said another model he has used, from Australia, kept shorting out in rain. He favors a product called Mosquito Terminator, which is being marketed on the Internet by its inventor, Jose Trevino of Houston (www.mosquitoterminator.com).

Consumers also must choose between contraptions that use CO₂ directly, or employ a catalytic converter to produce the gas from standard, 20-pound propane tanks. In both cases, you have to replace the gas bottles as they run out. The distribution network for CO₂ is much smaller than for propane—typically welding supply companies where customers not only must buy the carbon dioxide but rent a tank if they don't own one.

In addition to replacing the gas, consumers must replace depleted octenol and, in systems that have them, the adhesive traps.

Kerbey said the machines would be most effective if everyone in a neighborhood had one. Those living on the fringes, though, would still get mosquitoes from unprotected areas. And after heavy rains induce population explosions of the insect, the machines are unlikely to clear your yard. They would be useful as part of a multi-pronged attack that included larvicide dunks in ponds and chemical treatment of infested areas, he said.

South Texas is a hot spot for biting insects, but so too, Kerbey noted, are the salt marshes of the Chesapeake Bay.

Raymond Iannetta, president of American Biophysics, acknowledged that after a "bloom" of salt marsh mosquitoes, spurred by a high, soaking tide, it would take a week for his product to "take down" the infestation "to where you could stay in your yard."

But he noted too that the U.S. Coast Guard had been planning to abandon a Caribbean island before testing the Mosquito Magnet, and employees went from wearing netting and chemically impregnated clothing "to sunbathing."

Other devices by other makers are also available or in the pipeline.

American Biophysics is aggressively trying to differentiate its Mosquito Magnet from the rest of the crowd, filing the patent suit, turning a public relations firm, offering consumers a credit toward Mosquito Magnet if they send in another manufacturer's product, and sponsoring and/or publicizing scientific studies.

In a nine-day test in June by the Cayman Islands Mosquito Research & Control Unit, the Mosquito Magnet Liberty trapped 7,161 mosquitoes, Coleman's Mosquito Deleto caught 37 and the pulsating SonicWeb 5, said Lear, of the Boston public relations firm of Schneider & Associates.

Kerbey of Sweeney, Tex., said the effectiveness of the Dragonfly is hard to gauge because the insects are incinerated. In other models, the mosquitoes (and some other biting insects) are either sucked into a net or get stuck on adhesive. According to the manufacturer's Web site, the Dragonfly



MOSQUITO MAGNET

Fatal Attraction for Mosquitoes

MOSQUITO MAGNET® INDEPENDENT STUDIES FACT SHEET

CAYMAN ISLANDS MOSQUITO RESEARCH & CONTROL UNIT, CAYMAN ISLANDS (JULY 2002)

Abstract:

- The Mosquito Magnet® Liberty was tested against the Coleman Mosquito Deleto™ and the Applic SonicWeb™ over a nine-day period in a mosquito infested mangrove swamp in the Cayman Islands.

Results:

- The Mosquito Magnet® Liberty caught 7,161 mosquitoes, nearly 200 times more mosquitoes than Coleman's Mosquito Deleto™, which caught 37 mosquitoes. The SonicWeb™ caught only five.
- The Mosquito Magnet® Liberty caught nine mosquito species, which is 300% more than the other traps tested.
- In further testing in an urban area with a relatively low mosquito population, the Liberty trapped 286 mosquitoes over a 17-day period compared to only five trapped by the Mosquito Deleto™. The SonicWeb™ was not tested in the urban setting due to the lower number of mosquitoes collected in the area with a dense mosquito population.

FLORIDA A&M UNIVERSITY, PUBLIC HEALTH ENTOMOLOGY RESEARCH & EDUCATION CENTER, PANAMA CITY, FLORIDA (SUMMER 2001 AND SUMMER 2002)

(2001)

Abstract:

- The Mosquito Magnet® Pro was tested against the Flowtron Inc. Mosquito PowerTrap (also known as the Mosquito Eliminator) in a tropical salt marsh in Panama City, Florida.
- Traps were randomly assigned to four sites separated by distances of at least 300 ft., and operated for 16 hours.

Results:

- The Mosquito Magnet® Pro captured 10 times more mosquitoes than the Mosquito PowerTrap.

(2002)

Abstract:

- In a second test, the mosquito-capturing prowess of the Mosquito Magnet® Liberty was tested against seven other commercial traps on the market including the Mega-Catch™ and the SonicWeb™.

Results:

- The Mosquito Magnet® Liberty out caught four of the commercial models by 6 to 1 and it out caught the other models by at least 2.5 to 1.
- The Liberty also captured more species of mosquitoes than any other trap tested.

**DR. L.R. TAYLOR, TAYLOR ENVIRONMENTAL AND BIOLOGICAL SPECIALISTS
Holiday Township, Marloth Park, Eastern Mpumalanga, RAS
(July 2002)**

Abstract:

- The efficacy of the Mosquito Magnet® Pro was examined in the eastern Mpumalanga province of South Africa in less desirable winter conditions over a period of 6 days.
- The Mosquito Magnet® Pro was placed in two localities, a mixed woodland area with standing water in close proximity and a developed commercial facility comprising of a restaurant with an open deck overlooking a swimming pool and game watering hole.

Results:

- The Pro successfully captured biting midges and mosquitoes from six different taxa in limiting winter conditions. This suggests that the unit will be highly effective in spring, summer and autumn conditions.
- The capture rate for the Mosquito Magnet® Pro proves its ability to attract biting insects.
- The unit is able to capture taxa in proportion to that found to land on and bite human hosts. In addition, mosquito landing and biting rates diminish in the presence of the operating machines.

**STUDY BY DR. JEFFERY VAUGHN, DEPARTMENT OF BIOLOGY,
UNIVERSITY OF NORTH DAKOTA, GRAND FORKS NORTH DAKOTA (SUMMER 2002)**

Abstract:

- The study examined the capturing ability of the Mosquito Magnet® Pro and Liberty versus the New Jersey light trap over a 44-day period in two similar residential neighborhoods.

Results:

- The Mosquito Magnet® trap caught 20 to 30 times more mosquitoes than the New Jersey light trap.
- The Mosquito Magnet® reduced biting intensity in treated neighborhoods under certain conditions.

**U.S. ARMY MEDICAL COMMAND, THE CENTERS FOR DISEASE CONTROL, REPUBLIC OF
KOREA (SUMMER 2000)**

Abstract:

- Field tests of seven different mosquito traps were conducted where recent outbreaks of malaria had occurred near the U.S. base at Camp Greaves in South Korea.
- The tests were conducted in areas that hadn't been sprayed and that had large known populations of mosquitoes.

Results:

- According to the *Journal of the American Mosquito Control Association, September 2001*, the Mosquito Magnet® captured three times more mosquitoes than the next most effective trap, and over 13 times as many as others - even other traps that use CO₂ and octenol attractants.

CONTAINS CONFIDENTIAL BUSINESS INFORMATION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of

CERTAIN INSECT TRAPS

Investigation No. 337-TA-498

INITIAL DETERMINATION
Administrative Law Judge Sidney Harris

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Pursuant to the Notice of Investigation, 68 Fed. Reg. 53752, 70286, this is the Administrative Law Judge's Initial Determination in the Matter of Certain Insect Traps, United States International Trade Commission Investigation No. 337-TA-498. *See* 19 C.F.R. § 210.42(a).

The Administrative Law Judge hereby determines that no violation of section 337 of the Tariff Act of 1930, as amended, has occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation, of certain insect traps by reason of infringement of claim 1 or 32 of U.S. Patent No. 6,145,243.

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The following abbreviations may be used in this Initial Determination:

ALJ	-	Administrative Law Judge
ALJX	-	Administrative Law Judge Exhibit
CDX	-	Complainant's Demonstrative Exhibit
CPX	-	Complainant's Physical Exhibit
CX	-	Complainant's Exhibit
Dep.	-	Deposition
EDIS	-	Electronic Document Imaging System
FF	-	Finding(s) of Fact
JPX	-	Joint Physical Exhibit
JX	-	Joint Exhibit
PCL	-	Proposed Conclusion of Law (CPCL, RPCL or SPCL)
PFF	-	Proposed FF (CPFF, RPFF or SPFF)
PRF	-	Proposed Reply or Rebuttal Finding (CPRF, RPRF or SPRF)
RDX	-	Respondents' Demonstrative Exhibit
RPX	-	Respondents' Physical Exhibit
RX	-	Respondents' Exhibit
SX	-	Commission Investigative Staff Exhibit
Tr.	-	Transcript.

I. BACKGROUND

A. Institution and Procedural History of This Investigation

By publication of the Notice of Investigation in the *Federal Register* on September 12, 2003, the Commission instituted this investigation pursuant to subsection (b) of section 337 of the Tariff Act of 1930, as amended, to determine:

[W]hether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain insect traps by reason of infringement of claims 1-3, 5-7, 9, 13, 28, 31-33, 35-37, 39-41, or 43-45 of U.S. Patent No. 6,286,249 B1 or claims 1-4, 7, 15-19, or 21-39 of U.S. Patent No. 6,145,243 and whether an industry in the United States exists as required by subsection (a)(2) of section 337.

68 Fed. Reg. 53752, 70286 (2003).

The Commission named American Biophysics Corporation of Greenwich, Rhode Island as the complainant (“complainant” or “ABC”), and Blue Rhino Corporation (“Blue Rhino Corp.”) of Winston-Salem, North Carolina as the respondent. The Commission Investigative Staff of the Office of Unfair Import Investigations (“OUII”) is also a party in this investigation. *Id.*

On December 9, 2003, the Administrative Law Judge issued an unreviewed initial determination amending the complaint and notice of investigation to add the following respondents: Blue Rhino Consumer Products, LLC (“Blue Rhino CP”), and Blue Rhino Global Sourcing, LLC (“Blue Rhino GS”), both of Winston-Salem, North Carolina; Guangdong Dong Fang Imp. & Exp. Corp. (“Guangdong Dong Fang”) of Shenzhen, China;¹ and Lentek

¹ Blue Rhino Corp., Blue Rhino CP, Blue Rhino GS, and Guangdong Dong Fang, are
(continued...)

International, Inc. ("Lentek") of Kissimmee, Florida.² See Order No. 5 (initial determination); Notice of Commission Decision Not to Review, 69 Fed. Reg. 2003 (2004).

On April 7, 2004, the Administrative Law Judge issued Order No. 7, denying Blue Rhino's motion for summary determination of ABC's lack of standing, and granting ABC's motion for leave to amend the complaint to correct statements concerning ABC's incorporation. See Order No. 7 (Apr. 7, 2004).

On April 9, 2004, the Administrative Law Judge issued an unreviewed initial determination terminating the investigation as to certain accused Blue Rhino devices on the basis of a consent order. The consent order effectively took the '249 patent out of this investigation. See Order No. 9 (initial determination)(Apr. 9, 2004); Notice of Commission Decision Not to Review, 69 Fed. Reg. 24669 (2004); CPFF 17.

Any outstanding motions not heretofore ruled upon are denied.

B. The Products at Issue

The products at issue in this investigation are devices that are designed to attract and capture flying insects that bite humans, especially mosquitoes. It is uncontroverted that carbon dioxide (CO₂), which is believed to be a mosquito attractant, is emitted by complainant ABC's

¹ (...continued)
referred to as the "respondents" or "Blue Rhino."

Following institution of this investigation, Blue Rhino Corp. became a Delaware limited liability company, Blue Rhino, LLC, which then merged into Ferrellgas, L.P, a Delaware limited partnership, having a principal place of business in Liberty, Missouri. Further, Blue Rhino CP merged into Blue Rhino GS, and Blue Rhino GS is now a wholly owned subsidiary of Ferrellgas, L.P. See RPFF 1.9 through 1.18; Complainant's Admitted and/or Disputed FF at 3-4.

² On April 19, 2004, the Administrative Law Judge issued an unreviewed initial determination finding respondent Lentek in default. See Order No. 11 (initial determination)(Apr. 19, 2004); Notice of Commission Decision Not to Review (May 19, 2004).

“Mosquito Magnet[®]” products, the accused Blue Rhino “SkeeterVac” products, and devices covered by the asserted claims of the ‘243 patent. *See* Complainant’s Post-Hearing Brief at 6-7; Respondents’ Post-Hearing Brief at 1-3; OUII Post-Hearing Brief at 4.

Blue Rhino insect traps that were introduced into the market before this year are no longer at issue due to the aforementioned consent order. However, the complainant asserts that the new SkeeterVac products infringe claims 1 and 32 of the ‘243 patent, specifically the SV27, SV35 and SV2000 models or any of the respondents’ devices that may be similar to those models, regardless of their brand or model designations. The parties refer to the accused products as the “2004 SkeeterVac” models or devices. There are no known differences among the various 2004 SkeeterVac products that are material for the purposes of this investigation. *See, e.g., Id.*

II. IMPORTATION OR SALE

The respondents have admitted the importation and sale of accused products. *See, e.g.,* Complainant’s Post-Hearing Brief at 7 (citing Respondents’ Prehearing Statement, Tab 3; Complainant’s Prehearing Statement at 15); SPFF 23 (Blue Rhino Prehearing Statement, List of Proposed Stipulations).³

III. CLAIM CONSTRUCTION

Any finding of infringement or non-infringement requires a two-step analytical approach. First, the asserted claims of a patent must be construed as a matter of law to determine their proper scope. Second, a factual determination must be made as to whether the properly construed claims read on an accused device. *See Markman v. Westview Instruments, Inc.*, 52

³ Furthermore, no party has contested the Commission’s *in rem* and personal jurisdiction.

F.3d 967, 976, 979 (Fed. Cir. 1995)(*en banc*), *aff'd*, 517 U.S. 370 (1996).

To construe a claim, one first looks to the claim language. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999); *Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998). Then, one looks to the other intrinsic evidence, beginning with the specification and concluding with the prosecution history, if in evidence. *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996); *Markman*, 52 F.3d at 979 (“Claims must be read in view of the specification, of which they are a part.”).

If the claim language is clear on its face, then a court’s consideration of other intrinsic evidence is restricted to determining if a deviation from the clear language of the claims is specified. A deviation may be necessary if a patentee has chosen to be his own lexicographer, and does not use words according to their ordinary meaning. *Vitronics*, 90 F.3d at 1582. Any such special definition given to a word must be clearly defined in the specification. *Markman*, 52 F.3d at 980. A deviation may also be necessary if a patentee has relinquished a potential claim construction in an amendment to the claim or in an argument to overcome or distinguish a reference. *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 979 (Fed. Cir. 1999), *cert. denied*, 529 U.S. 1066 (2000).

One looks “to the specification to ascertain the meaning of the claim term as it is used by the inventor in the context of the entirety of his invention,” and not merely to limit a claim term. Examples or embodiments appearing in the written description may not be read into a claim. *Comark*, 156 F.3d at 1186-87. Thus, care must be taken to avoid reading “limitations appearing in the specification . . . into [the] claims.” *Intervet Am., Inc. v. Kee-Vet Lab., Inc.*, 887 F.2d 1050, 1053 (Fed. Cir. 1989). The Court of Appeals for the Federal Circuit has “expressly

rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004).

If the meaning of the claim limitation is apparent from the totality of the intrinsic evidence, then the claim has been construed. If, however, a claim limitation remains unclear, one may look to extrinsic evidence to help resolve the lack of clarity.⁴ Relying on extrinsic evidence to construe a claim is “proper only when the claim language remains genuinely ambiguous after consideration of the intrinsic evidence.” *Bell & Howell Document Mgmt. Prods. Co. v. Altek Sys.*, 132 F.3d 701, 706 (Fed. Cir. 1997).

Extrinsic evidence may always be consulted, however, to assist in understanding the underlying technology.⁵ See *Pitney Bowes*, 182 F.3d at 1309 (“[C]onsultation of extrinsic evidence is particularly appropriate to ensure that [a judge’s] understanding of the technical

⁴ Dictionaries are a form of extrinsic evidence with a special place in claim construction, and may sometimes be considered along with the intrinsic evidence. See *Vitronics*, 90 F.3d at 1584 n.6 (stating that, although technically the court is free to consult dictionaries at any time to help determine the meaning of claim terms, it may do so “so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.”).

⁵ With respect to the role of expert testimony, the Federal Circuit has held:

Had the district court relied on the expert testimony and other extrinsic evidence solely to help it understand the underlying technology, we could not say the district court was in error. But testimony on the *technology* is far different from other expert testimony, whether it be of an attorney, a technical expert, or the inventor, on the *proper construction* of a disputed claim term, relied on by the district court in this case. The latter kind of testimony may only be relied upon if the patent documents, taken as a whole, are insufficient to enable the court to construe disputed claim terms. Such instances will rarely, if ever, occur.

Vitronics, 90 F.3d at 1585 (emphasis in original).

aspects of the patent is not entirely at variance with the understanding of one skilled in the art.”). Extrinsic evidence may never be used “for the purpose of varying or contradicting the terms in the claims.” *Markman*, 52 F.3d at 981.

As stated in the *Markman*, opinion, “the focus in construing disputed terms in claim language is not the subjective intent of the parties to the patent contract when they used a particular term. Rather the focus is on the objective test of what one of ordinary skill in the art at the time of the invention would have understood the term to mean.” 52 F.3d at 986. *Accord Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575, 1578 (Fed. Cir. 1996)(The court assigns a claim term the meaning that it would be given by persons experienced in the field of the invention.). Nevertheless, it is a basic principle of claim construction that “[w]hen claims are amenable to more than one construction, they should when reasonably possible be interpreted so as to preserve their validity.” *Modine Mfg. Co. v. U.S. Int’l Trade Comm’n*, 75 F.3d 1545, 1557 (Fed. Cir. 1996), *overruled on other grounds*, *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558 (Fed. Cir. 2000), *rev’d*, 535 U.S. 722 (2002)(“*Festo P*”).

The asserted patent in this investigation is U.S. Patent No. 6,145,243, which issued on November 14, 2000, to Bruce E. Wigton and Mark H. Miller. The patent was assigned to ABC, the complainant in this investigation. *See* CX-1 (‘243 Patent). The ‘243 patent is based on Application No. 09/009,950 (January 21, 1998), a continuation-in-part of Application No. 08/718,634 (September 17, 1996). *See Id.*

In 2001, Armatron International, Inc., of Melrose, Massachusetts requested reexamination of certain claims of the ‘243 patent in view of U.S. Patent No. 4,519,776 to DeYoreo, and the Patent and Trademark Office granted reexamination with respect to claims 1-39. CX-5. The

'243 Reexamination Certificate issued on July 8, 2003. All asserted claims of the '243 patent remain in effect. *See* CX-137.

The asserted claims of the '243 patent, claims 1 and 32, are as follows:

1. An insect trapping apparatus, comprising:

an insect trap, including a trap inlet for the entry of insects;

a CO₂ gas source capable of providing CO₂ gas having a temperature above ambient temperature wherein the CO₂ gas source includes a combustion chamber having an outlet; and

an attractant exhaust system coupled to the CO₂ gas source, the attractant exhaust system being structured and arranged to cool heated CO₂ gas and to release an insect attractant comprised of the cooled CO₂ gas near the trap inlet at a temperature above ambient temperature and below approximately 115° F.

* * *

32. The insect trapping apparatus of claim 1, further comprising the trapping apparatus requires electric power to operate, wherein the combustion chamber is part of a hydrocarbon fueled generating system providing all the electric power requirements of the trapping apparatus.

'243 Patent (CX-1), col. 9, lines 28-41 and col. 11, line 65 through col. 12, line 2.

In order to construe these claims, one must first determine the level of ordinary skill in the relevant art. *See Markman*, 52 F.3d at 986; *Hoechst*, 78 F.3d at 1578. With respect to the '243 patent, there is general agreement among the parties that a person of ordinary skill in the art would have an undergraduate degree in mechanical engineering or chemical engineering. Such a person would have approximately 3 years of experience working with insect traps, and additional

instruction or knowledge in the areas of combustion and entomology. See Neitzel Tr. 213 (A person of ordinary skill would have “some sort of education or knowledge acquired in the field of entomology. * * * [It] could be acquired through self-study or on-the-job experience.”); Humphrey Tr. 468 (A person of ordinary skill “would learn a little bit about the biology of insects and the nature of the behavior of the insects, why they get trapped, what are good lures, things like that. It wouldn’t necessarily be experts, but would have what I would call a lot of common knowledge, or some common knowledge.”).

A. Claim 1

Claim 1 of the ‘243 patent reads on an insect trapping apparatus that has an inlet by which insects enter the trap, a CO₂ gas source that includes a combustion chamber with an outlet, and an “attractant exhaust system” coupled to the CO₂ gas source that is structured and arranged so that following combustion, the CO₂ is cooled and released above ambient temperature yet below approximately 115° F. Claim 1 further limits the claimed apparatus, *inter alia*, by providing that the CO₂ gas must be “released . . . near the trap inlet.” That limitation is the primary focus of the parties’ arguments concerning claim 1. The resolution of issues concerning this limitation, and particularly the meaning of the term “near,” is central to the disposition of this case.

Relying on common, dictionary definitions, the complainant argues that a person of ordinary skill would understand the term “near” ordinarily to mean “close in time, space, position or degree,” and the term “release” to mean “set free from confinement, restraint, or bondage; liberate.” Thus, the complainant argues that a person of ordinary skill in the relevant art would understand the claim language “release an insect attractant comprised of the cooled CO₂ gas near the trap inlet” to mean that the insect attractant is “released,” i.e., “set free from,” the device at a

location that is “close in space to the place where the insects enter the trap.” The complainant argues that this understanding of the claim language is supported by intrinsic evidence (including other claims, the specification, and the reexamination history) and extrinsic evidence (including dictionaries and admissions of an opposing expert witness). *See* Complainant’s Post-Hearing Brief at 9-14; Complainant’s Reply Brief at 4-14.

The respondents argue that the “near” limitation should be construed to require the CO₂ gas to be released about three inches below the trap inlet, with the inlet and outlet arranged in concentric tubes for the production of “counterflow,” such that inflow and CO₂ outflow “pass each other contiguously, so that there is shearing.” The respondents reject use of general dictionary definitions for this claim limitation. They argue that their proposed interpretation is required by the intrinsic evidence, including statements and examples from the patent specification. It is further argued that the complainant’s proposed interpretation would leave the claim invalid due to indefiniteness. Respondents’ Post-Hearing Brief at 1-17; Respondents’ Reply Brief at 1-12.

The Commission Investigative Staff argues that the ‘243 patent specification limits the phrase “near the trap outlet” in claim 1 to a counterflow configuration, and that the patent prosecution history requires the inlet to be contiguous to, and surrounding, the outlet releasing the attractant gas. The Staff would give little or no weight to the extrinsic record evidence, and rejects the argument that one of ordinary skill, having viewed the intrinsic patent evidence, would rely on a dictionary definition of the term “near.” OUII Post-Hearing Brief at 9-32; OUII Reply Brief at 1-2.

Having considered, *inter alia*, the language of claim 1, other ‘243 patent claims, the

specification and the prosecution history (including the reexamination), the Administrative Law Judge has determined that while “counterflow” is taught in connection with the embodiment detailed in the specification, and is apparently required by certain dependent claims of the ‘243 patent, it is not required by independent claim 1. Nor should claim 1 be construed to require an inlet tube that surrounds an attractant exhaust tube. Rather, the “release” of CO₂ gas may occur in the claimed apparatus without the existence of counterflow. The inlet must be “near” the exhaust in the sense that the inlet and point of attractant release are in close proximity to each other relative to the apparatus. The bases for this determination are discussed below, commencing with an analysis of the claim language. *Pitney Bowes*, 182 F.3d at 1305 (“The starting point for any claim construction must be the claims themselves.”); *Comark*, 156 F.3d at 1186 (“The appropriate starting point . . . is always the language of the asserted claim itself.”).

1. The Claim Language

The plain language of claim 1 of the ‘243 patent reads on an “insect trapping apparatus” in which cooled, attractant CO₂ gas must be released “near” the “trap inlet.”

A common understanding of the term “near” indicates closeness in space or distance.⁶ The plain claim language contains no explicit parameters or limitations (e.g., inches, centimeters or ratios) for the word “near.” There is no evidence that the term “near” is a term of art relevant to insect traps.

The plain language of claim 1 (first element) specifies that the trap inlet exists for the

⁶See *The American Heritage Dictionary, Second College Edition* (CX-203) at 833 (near . . . “adj . . . 1. Close in time, space, position, or degree”); see also Merriam-Webster OnLine, www.m-w.com (accessed July 27, 2004)(near . . . “preposition: close to”)(near . . . “adverb . . . 1: at, within, or to a short distance or time”).

entry of insects into the insect trap apparatus, and does not require the entry of anything else via the trap inlet. See '243 Patent (CX-1), col. 9, lines 28-41 ("an insect trap, including a trap inlet for the entry of insects").

Claim 1 contains no particulars about the "release" of cooled CO₂ gas through pipes, tubes or other means, other than to state that there is an "attractant exhaust system" which is "structured and arranged" to release gas at the appropriate temperature "near" the "trap inlet." Moreover, there is no requirement in claim 1 of any sort of inflow associated with the "trap inlet," only the entry of insects into the trap. Consequently, the claim neither specifies nor implies that the exhaust and the trap inlet must be positioned for counterflow.

Proper claim construction may be informed by an examination of non-asserted claims, such as the claims that depend from independent claim 1.⁷ See *Dow Chem. Co. v. United States*, 226 F.3d at 1341-42. In that regard, the complainant argues that a comparison of claim 1 with other '243 patent claims demonstrates that the term "near" should be given its common and

⁷ Claim differentiation is "not a hard and fast rule of construction." *Kraft Foods, Inc. v. Int'l Trading Co.*, 203 F.3d 1362, 1368 (Fed. Cir. 2000)(quoting *Comark*, 156 F.3d at 1186). However, an independent claim is normally expected to be broader than its dependent claims. The independent claim is not expected to require the limitations added in dependent claims. *Dow Chem. v. United States*, 226 F.3d 1334, 1341-42 (Fed. Cir. 2000)(applying the doctrine of claim differentiation and concluding that an independent claim should be given broader scope than a dependent claim to avoid rendering the dependent claim redundant); *Karlin Tech., Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 971-72 (Fed. Cir. 1999)(explaining that the doctrine of claim differentiation "normally means that limitations stated in dependent claims are not to be read into the independent claim from which they depend").

In any event, claim differentiation does not allow the expansion of claims beyond the specification and the explanations and representations made to the PTO in order to obtain allowance. *Tandon Corp. v. United States Int'l Trade Comm'n*, 831 F.2d 1017, 1023-24 (Fed. Cir. 1987); *Multi-form Desiccants, Inc. v. Medzam Ltd.*, 133 F.3d 1473, 1480 (Fed. Cir. 1998)(cautioning that "the doctrine of claim differentiation cannot broaden claims beyond their correct scope, determined in light of the specification and the prosecution history and any relevant extrinsic evidence").

ordinary meaning, which would exclude a counterflow limitation.

In particular, the complainant points out that claim 12, which ultimately depends from claim 1 through claim 11, expressly recites a “suction fan” to draw an airflow in through the trap inlet, such that the airflow is “directed counter to and substantially surrounding the exhaust flow of the cooled CO₂ gas.”⁸ In contrast, it is argued, claim 1 contains no such “counterflow” recitation, and thus none should be read into it. *See, e.g.,* Complainant’s Post-Hearing Brief at 12.

The respondents and the Commission Investigative Staff argue that counterflow is not the only limitation added by claim 12, and that moreover, there is evidence of other ways to move air into a suction tube aside from the use of a fan such as that required by claim 12. *See, e.g.,* Respondents’ Post-Hearing Brief at 14-15; OUII Post-Hearing Brief at 25-27.⁹ However, it should be noted that the evidence in this regard is quite general, and does not address how one of ordinary skill could actually produce counterflow in an apparatus such as the claimed insect trap without the use of a suction fan. *See* Neitzel Tr. 343-244; Humphrey Tr. 602-603.

In evaluating the arguments of the Staff and the respondents that there is no bright line

⁸ Claim 12 of the ‘243 patent is, as follows:

12. The insect trapping apparatus of claim 11, wherein the trap further includes a suction fan arranged to draw an airflow in through the trap inlet and out through the mesh bag, the airflow being drawn into the trap inlet being directed counter to and substantially surrounding the exhaust flow of the cooled CO₂ gas being released through the exhaust pipe outlet.

‘243 Patent (CX-1), col. 10, lines 14-21.

⁹The use of a suction fan is also required by other claims. *See* ‘243 Patent (CX-1), col. 10, lines 7-13 (claims 10 and 11).

distinction between claims 1 and 12 on the counterflow issue, it is instructive to examine the description or lack of it in these claims regarding the particular arrangements of hardware designed to achieve counterflow. In claim 12, the word “near” is not used at all. Instead claim 11, from which claim 12 also depends, recites a concentric arrangement of inlet and exhaust pipes (“a portion of an exhaust pipe extends within and through the suction pipe and extends out from the trap inlet”). Claim 12 similarly recites an “airflow being drawn into the trap inlet being directed counter to and substantially surrounding the exhaust flow.” While perhaps it is possible that such a configuration may not be necessary to assure counterflow, the respondents’ evidence to support this view is lacking. In any event, such a limitation is expressly stated in claims 11 and 12, while the plain language of claim 1 requires only that the “release” of CO₂ gas be “near the trap inlet (“for the entry of insects”).

While independent claim 1 is expected to allow for the counterflow limitation of its dependent claim 12, it contains no language such as counterflow, flow, shearing, or similar terms expressly limiting the claimed invention to a counterflow device. Although the existence of a counterflow limitation in claim 12 does not in and of itself preclude such a limitation from existing in claim 1, there is a clear contrast between claim 12, which requires counterflow and contains related limitations, and claim 1, which contains no such explicit or implicit limitations.

There is nothing in the plain language of claim 1 which states that there is suction or any other inflow associated with the “trap inlet,” which would be necessary for the type of counterflow (i.e., “contiguous” inflow, “shearing”) proposed by the respondents and the Staff. Counterflow, the concentric placement of an inlet tube and the release (or so-called “outlet”) tube (as well as the three-inch extension of the outlet tube beyond the inlet) are all limitations that, in

effect, the respondents and the Staff propose to read into claim 1 based on the specification and other evidence.

The respondents argue that the plain dictionary meaning of “near,” when applied to claim 1 “deprives the claim of clarity.” See Respondents’ Post-Hearing Brief at 4 (quoting *CCS Firness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002)). The Commission Investigative Staff argues that one must define claim terms based on the ‘243 patent specification in order to preserve patent validity.¹⁰ See OUII Post-Hearing Brief at 9. The respondents and the Staff do not refer to the specification for the usual purposes (e.g., possibly as a lexicon for particular terms in the patent claims). Instead, they rely on the specification to limit the language of claim 1 beyond its plain meaning, and rely on cases such as *Alloc, Inc. v. United States Int’l Trade Comm’n*, 342 F.3d 1361 (Fed. Cir.), *reh’g and reh’g en banc denied* (2003), which addresses situations in which “the specification makes clear at various points that the claimed invention is *narrower than the claim language might imply . . .*” 342 F.3d at 1370 (emphasis added).

In summary, the plain language of claim 1 of the ‘243 patent reads on an “insect trapping apparatus” in which cooled, attractant CO₂ gas must be released “near” the “trap inlet,” which exists for the entry of insects into the trap. The common meaning for the term “near” has to do with closeness in space or distance, and no party has presented evidence that the term has a special meaning to one of ordinary skill in the art. In order to ascertain nearness, the only context

¹⁰ The Commission Investigative Staff argues that “the term ‘near’ in the phrase ‘near the trap inlet’ in claim 1 does not provide any inherent physical or geometric parameters as to the location of the trap inlet relative to the outlet, such that one of ordinary skill in the art would understand how to practice the claimed invention. Thus, the specification must be examined to determine what is meant by locating the outlet ‘near the trap inlet.’” OUII Post-Hearing Brief at 9.

or parameters supplied by that claim relate to the apparatus itself and the locations of the inlet and attractant exhaust.

2. The '243 Patent Specification

Any claim must be construed in the context of the entire invention and the specification, although as a rule, the particular examples or embodiments discussed in the specification are not to be read into the claims as limitations. *See Markman*, 52 F.3d at 979; *Comark*, 156 F.3d at 1186-87. In this case, the parties rely on the specification to argue the scope of the invention that is described and enabled. *See, e.g.*, Respondents Post-Hearing Brief at 4-6 (citing *Knik Co. v. Int'l Trade Comm'n*, 362 F.3d 1359, 1364- 65 (Fed. Cir. 2004)). It is also argued that the specification plays a particular role in limiting the '243 patent claims, as the specification did in the Federal Circuit's *Alloc* decision.¹¹

¹¹ The respondents and the Commission Investigative Staff also rely on the decision in *Phillips v. AWH Corp. et. al.*, No. 03-1269, No. 1286 (Fed. Cir., Apr. 8, 2004), in which the Federal Circuit limited claims reciting "baffles" to baffles angled at other than 90°. The decision was based on statements made in the patent abstract and the "Disclosure of the Invention," and the fact that all embodiments in the specification disclosed baffles angled at other than 90°. Although not based on the Federal Circuit's prior opinion in the *Alloc* case, the *Phillips* decision is similar to the extent that it is another example in which limitations found only in the specification were read into patent claims.

Patentees may act as their own lexicographers, and they should place their claimed inventions in context through statements made in their specifications. *See Vitronics*, 90 F.3d at 1582; *Comark*, 156 F.3d at 1186-87. Nevertheless, courts have traditionally resisted attempts to limit claims based on particular limitations described in specifications. *See, e.g., Intervet*, 887 F.2d at 1053; *Liebel-Flarsheim*, 358 F.3d at 906. It appears that in the *Alloc* and *Phillips* cases, the Federal Circuit has acknowledged that in some – perhaps rare – circumstances, statements in a specification might leave a court no choice except to narrow claim terms beyond their unambiguous meaning. It does not appear that the intent of the Federal Circuit was to pave the way for a new type of claim construction method in which claims are to be narrowed in accordance with the limitations described in the specification. However, in light of cases such as *Alloc* and *Phillips*, some defendants have found a new vehicle through which they believe it permissible to argue that claims should be narrowed in view of the specification. *See Certain*
(continued...)

The *Alloc* case originated as a section 337 investigation, *In the Matter of Certain Flooring Products*, Inv. No. 337-TA-443, in which the complainant alleged that the respondents imported and sold flooring materials that infringed three United States patents owned by the complainant. The Commission found no section 337 violation due in part to a lack of infringement. One of the issues that the Federal Circuit addressed on appeal involved U.S. Patent No. 6,023,907, which included independent claim 1, a method of laying and mechanically joining floor panels in a row. Claim 1 of the '907 patent was representative of certain claims in all three asserted patents, and the Federal Circuit considered whether the Administrative Law Judge and the Commission were correct in their determination that asserted claim 1 of that patent required "play" (i.e., a space) between a locking groove on a first floor panel and the locking element of a panel adjacent to the first panel, even though the claim did not recite the term "play" (or any similar term). 342 F.3d at 1367-68.

The Federal Circuit affirmed the determination of the Administrative Law Judge and the Commission to include "play" as a limitation in the asserted claim 1 of the '907 patent, even though the term was not recited in the claim. The Federal Circuit recognized that in prior

¹¹ (...continued)

Power Amplifier Chips, Broadband Tuner Chips, Transceiver Chips, and Products Containing Same, Inv. No. 337-TA-490, Initial Determination at 36-44 (Apr. 2, 2004). To a certain extent, the *Alloc* and *Phillips* decisions have had the practical effect of calling into question the traditional method of claim construction.

After main and reply briefs were filed in this investigation, the Federal Circuit issued an order, *per curiam*, vacating the *Phillips* judgment, and determining to hear the case *en banc*. The Federal Circuit has directed the parties in the *Phillips* case to submit additional briefs addressing several questions pertaining to the interpretations of claims (including the use of dictionaries and the specification), and has invited the PTO, other governmental entities and other interested parties to file *amicus* briefs. See *Phillips v. AWH Corp. et. al.*, No. 03-1269, No. 1286, Order (Fed. Cir., July 21, 2004)(*per curiam*).

opinions, it had held that a court “must interpret the claims in light of the specification, *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995)(*en banc*), *aff’d* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), yet avoid impermissibly importing limitations from the specification. *Comark Communications v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998).” *Alloc*, 342 F.3d at 1370. The key to reconciling these mandates is balance. As explained by the Federal Circuit:

That balance turns on how the specification characterizes the claimed invention. *Sunrace Roots Enter. Co. v. SRAM Corp.*, 336 F.3d 1298, 1305 (Fed.Cir.2003). In this respect, this court looks to whether the specification refers to a limitation only as a part of less than all possible embodiments or whether the specification read as a whole suggests that the very character of the invention requires the limitation be a part of every embodiment. For example, it is impermissible to read the one and only disclosed embodiment into a claim without other indicia that the patentee so intended to limit the invention. *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1327 (Fed.Cir.2002). On the other hand, where the specification makes clear at various points that the claimed invention is narrower than the claim language might imply, it is entirely permissible and proper to limit the claims. *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1345 (Fed.Cir.2001).

Alloc, 342 F.3d at 1370.

In the *Alloc* case, the Federal Circuit examined the specification, and found that read as a whole it “leads to the inescapable conclusion that the claimed invention must include play in every embodiment.” *Id.* (citing *SciMed*, 242 F.3d at 1340, 1342). Further, the Federal Circuit found that the ‘907 specification indicates that the claimed invention “is indeed exclusively directed toward flooring products including play,” and “also distinguished the prior art on the basis of play.” *Id.* at 1371 (citing *Sunrace*, 336 F.3d at 1304-05). The specification alone was sufficiently clear to require the “play” limitation in the asserted claim, and the prosecution history

showed that the applicant had relied upon “play” and similar concepts to distinguish the claimed invention from the prior art to secure issuance of claims. Thus, the complainant in the *Floor Products* section 337 investigation (the appellant Alloc before the Federal Circuit) could not obtain a claim construction that disregarded “play.” *Id.* at 1371-73.

With respect to the ‘243 patent, several portions of the specification are at issue. The first area of controversy concerns the ‘243 patent Abstract, which states: “A counterflow of outside air is drawn into the trap through the suction tube that concentrically surrounds the exhaust tube.” *See* ‘243 Patent (CX-1), Abstract.

While the ‘243 patent Abstract alludes to some of the limitations that the respondents and the Commission Investigative Staff would read into claim 1 (yet notably excluding the three-inch limitation proposed by the respondents), it should be given little or no weight. Although an abstract may provide an early indication of the claimed invention, it is necessarily brief; it is not specifically addressed to one of ordinary skill in the art; and it is not intended for use in limiting the scope of particular claims. *See SciMed*, 242 F.3d at 1342; *Liebel-Flarsheim*, 358 F.3d at 908; 37 C.F.R. § 1.72(b). In this instance, the Abstract provides an early, albeit incomplete, description of some features of a depicted embodiment, while not addressing the more salient question of whether any of the particular features outlined therein are limitations that must be imposed on a broad independent claim such as claim 1.

The Background of the Invention portion of the specification, which is also in controversy, states in part:

The invention relates to methods and apparatus for attracting and trapping or otherwise disabling insects, and, in particular, to a counterflow device that produces CO₂ gas and then cools the CO₂ gas

for use as an insect attractant in an outflow from the trap.

'243 Patent (CX-1), col. 1, lines 12-16.

According to this paragraph, particular attention is drawn to "a counterflow device," yet this paragraph also states that the claimed invention relates to "methods" (plural) and "apparatus" (singular or plural) for attracting and trapping insects. The Background portion of the specification continues in its next paragraph by describing the use of "suction traps," "screened material" for trapping insects," "fan mechanisms," and lures such as lights, the chemical octenol, and CO₂ gas (from sources other than combustion). '243 Patent (CX-1), col. 1, lines 17-28.

Some features mentioned in the Background portion of the specification either relate to limitations that no party seeks to have read into independent claim 1, or relate to methods or devices that are not connected to the claimed invention at all. Thus, the Background portion of the specification places the claimed invention in context within the relevant art. It does not limit the claimed invention to any particular method or apparatus.

It is also observed that although the Background portion of the specification refers in particular to a counterflow embodiment of the claimed invention, it also refers to the general use of suction traps in the prior art, and the use of various lures (including some lures clearly outside the requirements of claim 1). In no instance does this, or any portion of the specification, state that counterflow is necessary for insect trapping, or that counterflow traps are superior to other types of traps. Nowhere in the '243 patent specification is there a dichotomy drawn between counterflow traps and other types of traps, so as to indicate that all claims must refer to a counterflow trap.

The specification of the '243 patent is markedly different from that cited by the Federal

Circuit in the *Alloc* case, in which the specification stated that “play” was characteristic of the claimed system; that such “play” between flooring panels would be illustrated in the embodiments that followed; and that floor systems without “play” were inferior. *Alloc*, 342 F.3d at 1369-70. No such statements are made in the ‘243 patent specification about counterflow or its absence.

The next portion of the specification, the “Summary of the Invention,” begins with a paragraph that is the subject of controversy among the parties, and states, as follows:

The invention provides a stand-alone, portable, self-powered insect trap that is capable of operating continuously for about one month on a single twenty-pound tank of propane fuel. The device generates its own insect attractants of carbon dioxide (CO₂), heat and water vapor through catalytic conversion of a hydrocarbon fuel in a combustion chamber. The trap device includes a counterflow insect trapping device of the type disclosed in co-owned patent application Ser. No. 08/718,643, the entire disclosure of which is included herein by reference. The hot insect attractants generated in the combustion chamber are diluted and cooled to a temperature above ambient temperature and below about 115° F. by mixing with air, and then the mixture is exhausted downward through an exhaust tube. A counterflow of outside air is drawn into the trap through a suction tube that concentrically surrounds the exhaust tube. Biting insects are captured in a porous, disposable bag connected to the other end of the suction tube. Thermoelectric modules coupled to the combustion chamber generate power for fans that provide the exhaust flow and the suction flow. Additional chemical attractants may be used with the device to make the trap even more effective. The trap may be adapted for trapping different types of insects by adjusting airflow velocities and attractants.

‘243 Patent (CX-1), col. 1, lines 37-60.

In the above quoted paragraph, the specification summarizes the invention with reference to “counterflow,” the ‘643 patent application which pertains to a counterflow technique, suction flow, and a suction tube that concentrically surrounds an exhaust tube. The question is whether

such statements made in this paragraph characterize every embodiment of the invention, and thus limit the invention.

A fair reading of this portion of the invention summary does not lead to the conclusion that counterflow must characterize each and every embodiment of the claimed invention and all claims of the patent. The lead sentence states that “[t]he invention provides a stand-alone, portable, self-powered insect trap that is capable of operating continually for about one month on a single twenty-pound tank of propane fuel.” Even that lead sentence lists features that are not required by claim 1, such as the “self-powered” feature. The paragraph continues by reciting counterflow, the use of a disposable bag, thermoelectric modules, and yet other features. Thus, the applicants chose to summarize the invention by attempting to describe all or many of the elements covered by the claimed invention. That is not the same as describing essential limitations that must be included in any embodiment.

For example, a dispute has arisen among the parties as to whether the claimed apparatus must include counterflow because this portion of the specification states that “[t]he trap device *includes* a counterflow insect trapping device of the type disclosed in co-owned patent application Ser. No. 08/718,643, the entire disclosure of which is incorporated herein by reference.” ‘243 Patent (CX-1), col. 1, lines 43-46 (emphasis added). There is no doubt that the applicants indicate in this statement that counterflow, and a particular type of counterflow associated with the ‘643 patent application, is a part of (i.e., subsumed in, or included in) the claimed invention. In fact, the specification continues by illustrating the use of counterflow in a device that is within the patent’s claims. However, neither this sentence, nor this paragraph as a whole, states that all devices under any claim of the ‘243 patent must make use of counterflow or

some of the other limitations discussed in this paragraph.¹²

Although the detailed embodiment of the '243 patent specification pertain to a counterflow device, the text of the '243 patent specification does not provide any direct explanation as to why counterflow should be used in an embodiment of the claimed invention.

Some explanation could be found, however, in U.S. Patent No. 6,286,249 (September 11, 2001), which is relied upon by the respondents, and which is related to the '243 patent.¹³

The '249 patent specification states, in part:

Flying insects 64 are drawn toward [to] the device 10 by following a plume of air containing the attractant. The plume is created by the downward directed exhaust flow 50 from fan 42. *It has been observed that some insects tend to follow the upper edge of a flow of air containing an attractant. Accordingly the device 10 is structured such that the inflow 48 is directed to flow near an upper edge of the outflow 50 outside the device. As the insects 64 follow the upper edge of the exhaust plume, they are led naturally to the suction flow 48 being drawn into device 10, and are thereby urged*

¹² The respondents argue that because the applicants used the word "includes" when referring to counterflow, counterflow must exist, under established principles of patent law, in all devices covered by the claimed invention. However, the cases relied upon by the respondents pertain to the use of the word "comprising" as a term of art in the drafting of patent claims, or to the use of the word "including" within a patent claim, given a narrowly defined set of circumstances. See Respondents' Post-Hearing Brief at 9-10 (citing *Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1344-45 (Fed. Cir. 2003), and *Toro Co. v. White Consolidated Indus., Inc.*, 199 F.3d 1295, 1302 (Fed. Cir. 1999)). Those cases are not intended to provide guidance as to how the word "including," or "includes," should be generally interpreted in text, such as in a patent specification. It does not seem appropriate in this instance to impose such claim drafting standards on this portion of the patent specification.

¹³ The '249 patent issued on the '643 application. As indicated in the text, *supra*, the '243 patent is a continuation-in-part of the '643 application, and the '643 application is incorporated by reference into the '243 patent specification. See '243 Patent (CX-1); '249 Patent (CX-2); '243 Patent Prosecution History (CX-3).

As discussed above, the '249 patent was originally asserted in this investigation. It is no longer at issue due to a consent order stipulation between the complainant and the respondents, and the subsequent entry of a consent order.

by suction flow 48 to enter channel 30 through substantially annular-shaped opening 32. Once entrained in a suction stream, the insect's natural tendency is to fly upward to avoid danger, which carries the insect 64 further into the device 10. The insects 64 eventually find their way through opening 24 and opening 66 of frusto-conical structure 41 into mesh bag 36 where they are trapped.

'249 Patent (CX-2), col. 5, lines 6-22 (emphasis added).

Thus, the '249 patent teaches that some insects follow the upper edge of a flow of air, and an inflow or suction near the upper edge of an attractant outflow may "urge" insects into a trap. A comparison of the embodiments depicted in the '243 and 249 patents shows that they are not identical, especially with respect to the structure of the exhaust and inflow/inlet structures. Nevertheless, it appears that the general teaching in the '249 patent about insect behavior and counterflow is applicable to the '243 patent, especially inasmuch as both patents are related through the '643 application. Yet, the teachings of the '249 specification do not, as argued by the respondents, demonstrate that the "whole objective" of the invention of the '243 patent is to set up a "concentration edge" through the use of counterflow. Cf. Respondents' Post-Hearing Brief at 12-13. Indeed, to the extent that the '243 patent specification attempts to state the objective of the claimed invention, it pertains to the release of a carbon dioxide attractant. At the end of the detailed discussion of the illustrated embodiments, immediately before the claims, the specification states:

CO₂ gas can be provided by a source other than burner 56, and heated and/or diluted by other means than those disclosed in the specific embodiment described above. Any insect trap that releases a mixture of CO₂ gas and air with a CO₂ concentration in a range between about 500 ppm and about 2500 ppm and/or at a temperature above ambient temperature and below about 115° F. is contemplated to be within the scope of the invention.

Other embodiments are within the scope of the following claims.

'243 Patent (CX-1), col. 9, lines 17-24.

While one may argue whether the above statement is sufficient to describe an entire invention, it is significant that it does not mention counterflow. Certainly, the specification cannot be found to characterize counterflow as the "objective" of the invention, or essential to the invention.

In fact, in at least one portion of the invention Summary, there is noticeably a lack of any mention of counterflow. The sixth paragraph of the Summary describes "another aspect" of the invention which provides "a trap having a trap inlet through which insects can enter into the trap, providing a mixture that includes CO₂ gas and air, and releasing the mixture near the trap inlet at a temperature above ambient temperature and below about 115° F." See '243 Patent, col. 2, lines 38-52. While this paragraph continues by explaining that a fan can be used to mix the heated CO₂ gas with air from an exhaust pipe inlet, in this "aspect" of the invention, the outlet for the exhaust (i.e., mixture of CO₂ gas and air) need only be "near the trap inlet." In contrast to the discussion about using a fan to mix air and CO₂ gas in the exhaust system, there is no discussion of the use of a fan or of any type of airflow into the trap inlet. As pointed out by the complainant, there is no indication of counterflow between the attractant exhaust and the trap inlet.

The respondents argue that this understanding of the "aspect" of the invention is shortsighted because it does not take into account the next paragraph, which provides:

The method *can further include* the step of employing a suction fan to draw an inflow of air in an upward direction into the trap inlet, wherein releasing the mixture includes directing an exhaust flow of

the mixture in a direction downward and counter to the inflow from an exhaust pipe outlet positioned directly below the trap inlet.

See '243 Patent (CX-1), col. 2, lines 53-58 (emphasis added).

It would not be proper to read this discussion of counterflow into the preceding paragraph. This paragraph begins by stating that the method "can" further include the suction fan and an exhaust flow that is counter to the inflow. There is no indication that these refinements to the method must be used in all embodiments of the claimed invention or that they must be used in the "aspect" of the invention described in the previous paragraph. In fact, by stating that the method "can further include" the particular features that follow, it is clear to the reader that what follows is optional. In summary, the aspect of the invention described in the sixth paragraph of the invention Summary need not be combined with the subsequent paragraph in which one method of achieving counterflow is discussed. Rather, the "aspect" discussed in the sixth paragraph of the invention summary (col. 2, lines 38-52) is conspicuous because of the absence of any direct or indirect indication of counterflow.

A major portion of the '243 patent specification is, of course, a "Detailed Description of the Invention," depicting an embodiment with reference to the patent's Figures. It appears to be without controversy that the embodiment detailed in the Figures is a counterflow device. See, e.g., '243 Patent (CX-1), col. 4, lines 52-63; col. 5, lines 4-16.

In its discussion of the depicted embodiment, the specification contains one specific reference to the distance between the exhaust and the trap inlet, as follows:

An exhaust tube 44 provides a flow of an insect attractant, such as CO₂, in a direction counter to the direction of flow of air being drawn in through suction tube 30. The exhaust flow is directed downward to the ground, while the air being drawn into trap 28 through suction

tube 30 is directed upwards. Exhaust tube 44 enters enclosure 16 through wall 42, then enters suction tube 30 through a side opening 46. Exhaust tube 44 then extends about concentrically within and through suction tube 30. *An open end 48 of exhaust tube 44 extends down past open end 32 of suction tube 30 by about three inches.* Thus, an exhaust flow is surrounded by an inflow, as indicated by arrows 50, 52, respectively.

'243 Patent (CX-1), col. 5, lines 4-16 (emphasis added).

This embodiment clearly uses counterflow, and an exhaust tube that extends concentrically within a suction tube which serves as a trap inlet. Yet, even though this embodiment contains limitations that are not recited in independent claim 1, presumably the location of the exhaust is nevertheless "near" the "trap inlet," as required by broad language of independent claim 1 and several other independent claims of the '243 patent.¹⁴ The distance of "about three inches" between exhaust and trap inlet discussed in this portion of the specification should be viewed as an example of "near," within the meaning of claim 1.

The specification subsequently provides additional information about the location of the trap inlet (which in this case is the opening of a suction tube), as follows:

The elevation of inlet opening 32 of suction tube 30 can be adjusted to optimize the device's effectiveness in capturing different types of insects. For example, for capturing common North American mosquitos and sand flies, the elevation of inlet opening 32 is optimized at about 18 inches from the ground. For malarial anopheles mosquitos in Africa inlet opening 32 port can be optimized at only about 6 inches above the ground. Extension tubes can be used to adjust the elevation of inlet opening 32.

'243 Patent (CX-1), col. 8, line 64 through col. 9, line 5.

¹⁴ See also '243 Patent (CX-1), col. 10, lines 36-46 (independent claim 17, "near"), col. 11, lines 18-46 (independent claim 27, "directly below"); col. 12, lines 3-29 (independent claim 33, "near"); col. 12, lines 37-57 (independent claim 36, "near"); col. 13, line 1 through col. 14, line 6 (independent claim 39, "near").

This portion of the '243 patent specification teaches adjustment of the "inlet opening 32" (or trap inlet in this particular illustrated embodiment) to various distances above the ground, depending upon the type of insect to be trapped. In making such adjustments to the location of the trap inlet, there may be changes in the distance between the exhaust and the trap inlet. However, there is a lack of information concerning the distance of the main body of the apparatus (including the "trap enclosure 16") from the ground, the length of the exhaust tube, the distance of the exhaust tube from the ground, and whether the exhaust tube could also be adjusted. Thus, it is not clear how many inches of distance would exist between the exhaust and the trap inlet following these suggested adjustments. However, it is clear that while "about three inches" is an example of the distance that may exist between the exhaust and trap inlet, the precise number of inches between them may vary so long as the exhaust and the inlet remain "near" each other.¹⁵ This example also shows that nearness or closeness must be evaluated in terms of the entire apparatus, including the length of any exhaust pipes or tubes used, because such pipes or tubes may extend to various lengths beyond the main body of the trapping apparatus. Thus, the openings for the inlet and exhaust may be extended out from the main body of the trapping apparatus, yet remain near each other.

3. The '243 Prosecution and Reexamination

The prosecution history preceding issuance of the claims, and the subsequent reexamination proceedings are the subject of arguments concerning the correct construction of

¹⁵ It seems unlikely that even the longest extension of the suction tube suggested by the specification would result in a great variance in the distance between the exhaust and trap inlet inasmuch as this embodiment is designed to maintain a counterflow between the exhaust and inflow.

claim 1.

It is argued that on two different occasions during patent prosecution, the applicants argued that the claimed invention of the '243 patent is a counterflow device. See OUII Post-Hearing Brief at 15-17. On the first occasion, the applicants (through counsel) attempted to amend the pending claims. In the applicants' Remarks, they stated that the "trap device includes a counterflow insect trapping device of the type disclosed in co-owned patent application Serial No. 98/718,643, the entire disclosure of which is included by reference." In the same paragraph, the applicants stated that a "counterflow of outside air is drawn into the trap through a suction tube that concentrically surrounds the exhaust tube." '243 Patent Prosecution History (CX-3) at ABC011739. The same statements were made in response to a subsequent PTO Office Action. See *Id.* at ABC011774.

These statements by the applicants during the '243 patent prosecution are the same statements made in the Summary portion of the current specification, discussed above, and add little to the intrinsic evidence. The statements made by the applicants include further limitations that no party argues are limitations of claim 1 (e.g., self-power, continuous one-month operation per 20 pounds of propane, etc.), and appear to be an attempt to describe the broad scope of the limitations, rather than to list the essential limitations that must be included in every claim.

The record of the reexamination provides additional, and somewhat more elucidating perspectives of the claimed invention of the '243 patent.¹⁶ At one point, the Examiner rejected claim 1 of the '243 patent based, *inter alia*, on U.S. Patent No. 4,519,776 to DeYoreo because it

¹⁶ Statements made during reexamination proceedings "are relevant prosecution history when interpreting claims." *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1439 (Fed. Cir.), *cert. denied*, 488 U.S. 986 (1988).

was believed that the '776 DeYoreo patent taught the release of a CO₂ and air mixture near the trap inlet.¹⁷ '243 Patent Reexamination (CX-5) at ABC011328-11329. There was no mention of counterflow in the Examiner's rejection.

The complainant and the respondents point out that during reexamination, an examiner is to give claims their "broadest reasonable interpretation." See Respondents' Post-Hearing Brief at 10 (quoting *American Academy of Science Tech Center*, 2004 WL 1067528 *3 (Fed. Cir., May 13, 2004); Complainant's Post-Hearing Brief at 13 n.4 (quoting the same case, and the Manual of Patent Examining Procedure at 2111).¹⁸ The respondents further argue that because the patentees had not mentioned counterflow to the Examiner, any attempt to decipher the Examiner's reasoning for avoiding a discussion of counterflow would be pure speculation. However, even taking the broad nature of the reexamination into account, it is noteworthy that the Examiner could apparently conceive of the claimed invention without counterflow, and would reject the claimed invention without considering counterflow.

¹⁷ The '776 DeYoreo patent is not a patent on an insect trap. Entitled, "Apparatus for Attracting Insects," the '776 patent discloses a carbon dioxide generator, and teaches that the apparatus described therein can be used with an insect trap. The patent was assigned to Armatron International, Inc. See '776 Patent (RX-4), col. 1, lines 22-28, 56-64; Neitzel Tr. 251-252. The '776 patent claims an apparatus that produces carbon dioxide by the catalytic combustion of propane. The '776 patent does not disclose the generation of electrical power. See RX-4 ('776 Patent), col. 2, line 41 through col. 3, line 5, col. 8, lines 1-2; Neitzel Tr. 253, 672; Humphrey Tr. 574.

It is argued that the Skeeter-Eater is an embodiment of the '776 DeYoreo patent. Both are connected to the Armatron company. See RPF8.3.1.3 (citing DeYoreo Dep. (RX-446) Tr. 90).

¹⁸ "The 'broadest reasonable construction' rule applies to reexaminations as well as initial examinations." *In re American Academy of Science Tech Center*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

In addition, and perhaps more revealing to anyone reading the reexamination history, there is a subsequent paper filed by the patentees following an interview with the Examiner, in which, *inter alia*, the patentees specifically discussed the meaning of the terms contained in the third element of claim 1 of the '243 patent (which contains the word "near"). The patentees stated:

To facilitate an understanding of this claim language and how the recited temperature range characterizes the "insect attractant" as it is being released, the Applicants' representative agreed during the interview to provide a "breakdown" of the grammatical construction of this language. According to this quoted claim language, the "attractant exhaust system" must be "coupled to the CO₂ gas source." Further, the "attractant exhaust system" must be "structured and arranged" to perform two specific functions: (1) "to cool heated CO₂ gas;" and (2) "to release an insect attractant comprised of the cooled CO₂ gas." The remaining language limits the release of the "insect attractant" to where it is released and at what temperature it is released. The language "near the trap inlet" defines where the "attractant exhaust system" releases the "insect attractant." The language "at a temperature above ambient temperature and below approximately 115° F" defines the temperature at which the "attractant exhaust system" releases the "insect attractant." With this understanding of how the temperature range language characterizes the releasing function of the "attractant exhaust system," it is clear that the only reasonable interpretation for claim 1 is that it is limited to an apparatus wherein the "insect attractant" is within the claimed range at the point of release from the "attractant exhaust system."

'243 Patent Reexamination (CX-5) at ABC011340 (underlining in original).

This detailed explanation of the meaning of the claim terms is significant for its lack of any discussion of counterflow – or any of the other limitations that only the respondents and Staff would read into claim 1, such as a concentric arrangement of the exhaust and inlet. Indeed, with respect to the term "near" this paragraph states that the phrase "near the trap inlet" defines where the attractant exhaust system releases the insect attractant. Such a statement is more indicative of

the concept of closeness in proximity between the exhaust and inlet than it is of a structure of concentric tubes arranged for counterflow. As explained by the patentees, the location of the trap inlet effectively defines the “point of release” for the attractant because the exhaust and inlet are “near” each other.

These statements made during the ‘243 patent reexamination, especially when combined with the teaching of “three inches” in the detailed embodiment of the patent, paint a picture of close proximity between the point of release for the CO₂ gas and the trap inlet.

4. Extrinsic Evidence

Prior art cited in the prosecution history is within the category of intrinsic evidence. Art that was not considered by the examiner is extrinsic. *Tate Access Floors, Inc. v. Interface Architecture Resources, Inc.*, 279 F.3d 1357, 1371 n.4 (Fed. Cir. 2002). For example, the complainant argues that the product literature for the Flowtron Skeeter-Eater device, which was not before the Examiner, instructs the user to mount the device “as close to your bug killer as possible; within one foot.” See Complainant’s Post-Hearing Brief at 14-15 (referring to CX-124 at AR 04625). The respondents argue that the one-foot range given in the Skeeter-Eater manual cannot overcome the intrinsic evidence contained in the ‘243 patent specification, which mentions only three inches. See Respondents’ Reply Brief at 12. The Commission Investigative Staff similarly argues that such extrinsic evidence would not prevent one of ordinary skill from understanding the claimed invention in terms of the ‘243 patent specification which, it is argued, actually requires counterflow. See OUII Post-Hearing Brief at 32.

The Skeeter-Eater was not a single insect trap and luring device. Rather, it was a mosquito luring device that generated carbon dioxide through the conversion of propane, and

was to be used in conjunction with a trap. CX-124; Neitzel Tr. 240, 251. While one of ordinary skill might appreciate the fact that the Skeeter-Eater, like the '243 patent, is based on the understanding that carbon dioxide is an insect attractant, it is not clear that one of ordinary skill would make any further comparisons between the devices so as to conclude that locating an insect trap within one-foot of the device is within claim 1 of the '243 patent. It is unclear whether one of ordinary skill would or could actually place the Skeeter-Eater exhaust as close to a trap's inlet (assuming there is something on the trap resembling a "trap inlet") as is required by the '243 patent.

For example, the Skeeter-Eater generator and a trap could not be arranged in the manner of the embodiment detailed in the '243 specification. Nor is it clear whether the CO₂ emitted from the Skeeter-Eater would have all the properties of the exhaust claimed in the '243 patent with its controlled temperature, and the possible mixture of carbon dioxide with air and other attractants. It must be observed that the '243 patent refers to the distance between the point of CO₂ release and the trap inlet, while the Skeeter-Eater instructions refer to the proximity of two separate devices, not openings such as exhausts or inlets on the same apparatus. Thus, it is not clear that the Skeeter-Eater instructions indicate to one of ordinary skill that the word "near" in claim 1 really means "one foot," especially between an exhaust and an inlet.

However, a close reading of the complainant's main brief on the question of claim construction shows that the complainant actually relies on the Skeeter-Eater instructions for the more general proposition that one of ordinary skill in the art would not necessarily think of the use of a CO₂ gas attractant in terms of trap geometry or airflows. Certainly, the Skeeter-Eater is one example of the undisputed fact that prior to the '243 patent, lures (including attractant gases)

were used for the purpose of insect trapping, and the use of such lures did not necessarily involve specific trap geometries or airflows, such as counterflow. Yet, one need not turn to extrinsic evidence to establish that.

As discussed, the '243 patent mentions the prior use of attractants, such as CO₂ gas and other airborne lures. The Background discusses the use of such attractants "in the vicinity of the trap." See '243 Patent (CX-1), col. 1, lines 17-28. The CO₂ gas is not released merely in the vicinity of a trap, it occurs as a part of the claimed apparatus which includes the trap inlet.

5. Conclusion

The plain language of claim 1 and the specification of the '243 patent requires the release of attractant gas "near" the trap inlet, which means close to the inlet. Claim 1 of the '243 patent does not require a concentric arrangement of an exhaust and an inlet tube in order for the limitations of claim 1 to be met. It does not require counterflow, or indeed any inflow whatsoever via the trap inlet. Only insects must enter through the trap inlet, according to claim 1.

The question of whether or not the exhaust and trap inlet are "near" is a question of distance or physical proximity that is to be assessed in terms of the claimed apparatus, especially the location of the exhaust and inlet, which may in some instances extend beyond the main body of the trap (or "trap enclosure"). With respect to the '243 patent, an example of an exhaust that is near the trap inlet is about three inches.

B. Claim 32

The only other asserted claim of the '243 patent is claim 32, which is as follows:

32. The insect trapping apparatus of claim 1, further comprising the

trapping apparatus requires electric power to operate, wherein the combustion chamber is part of a hydrocarbon fueled generating system providing all the electric power requirements of the trapping apparatus.

'243 Patent (CX-1), col. 11, line 65 through col. 12, line 2.

The complainant argues that a person of ordinary skill in the art would understand claim 32 to mean that "the combustion chamber is part of a combination of equipment that is used to generate all of the electrical power requirements of the insect trap, and that the system is fueled by the combustion of a hydrocarbon, such as propane." It is further argued that the "system," is not limited to the combustion chamber, and includes other components, such as an ignition system, which interact to provide all the electric power requirements of the trapping apparatus. *See, e.g.*, Complainant's Post-Hearing Brief at 15-17.

The respondents argue that claim 32 requires a hydrocarbon-fueled generating system that provides all of the electrical power requirements of the trapping apparatus. It is further argued that a starter circuit would not be part of the hydrocarbon system. *See, e.g.*, Respondents' Post-Hearing Brief at 2.

The Commission Investigative Staff argues that claim 32 should be read to cover an insect trap that "utilizes a propane generated thermal electric module to power the device after it has been ignited." It is further argued that the igniter is not part of the power requirements of the trap. *See, e.g.*, OUII Post-Hearing Brief at 32.

Given the plain claim language, it is clear that all electrical power needed by the trapping apparatus must be supplied by the hydrocarbon-fueled (e.g., propane) generating system. The generating system is based on combustion inasmuch as the claim specifies that the trap's

combustion chamber is part of the generating system. By stating that the combustion chamber is a “part” of the system, the claim indicates that there are other components in the system, without specifying them.

The parties draw attention to the fact that a starter or igniter might be needed to begin operation of a hydrocarbon-fueled generating system, for example, to initiate the combustion of propane. If such a starter or igniter were needed, they question whether such a starter/igniter would be considered part of the generating system, or whether a trap that requires a starter/igniter would be considered outside claim 32.

The plain language of claim 32 does not address the question of how combustion begins. Whether or not a starter or igniter would be part of a “system” covered by claim 32 might depend on the particulars of the starter/igniter in question. The plain language of claim 32 requires only that all of the *electrical* needs of the trap be supplied by the generating system. It places no explicit limitation on how the hydrocarbon (e.g., propane) is initially ignited, especially if such ignition is non-electrical in nature.

Two portions of the ‘243 patent specification text directly address the question of igniting hydrocarbon fuel in the combustion chamber, and they do so with particular reference to an electric spark, as follows:

A high voltage piezo-electric¹⁹ spark igniter 86, of a type often included with gas grills and gas fireplaces, has a manual push-button 88 mounted through a front panel 90 of burner enclosure 18. A high voltage insulated conductor 92 connects the piezo generator to a ceramic-insulated electrode 94 mounted through the combustion chamber cover plate 70. Pressing push-button 88 provides a single

¹⁹ See Merriam-Webster OnLine, www.m-w.com (accessed August 9, 2004)(“ piezo- combining form . . . Etymology: Greek *piezein* to press * * * : pressure <piezometer.”).

spark intended to ignite the propane-air fuel mixture within combustion chamber 68.

* * *

A flame is initiated above bead bed 84 with spark igniter 86. As the flame burns, heat generated from the combustion warms combustion chamber 68 and bead bed 84. After the flame has been going for some 30 seconds to 45 seconds, the heat is reflected down into catalyst bead bed 84. The catalyst is warmed up and as the catalyst is warmed up it achieves a surface combustion temperature and the flame converts to a catalytic surface combustion in bead bed 84. As a greater amount of the fuel-air mixture oxidizes in bead bed 84, the flame becomes starved of fuel and is extinguished. The combustion continues entirely on a catalytic basis.

'243 Patent (CX-1), col. 62 through col. 6, line 3; col. 7, lines 3-13.

Thus, the embodiment detailed in the '243 patent specification demonstrates that an apparatus covered by the claimed invention may have, and rely upon, a piezoelectric igniter. Although the spark created by the igniter is identified by the specification as "electric," use of the igniter does not place the apparatus outside claim 32, which requires the hydrocarbon-fueled generating system to provide for "all electrical power requirements of the trapping apparatus." Claim 32 does not require that all of the electricity must be a direct result of hydrocarbon combustion alone.²⁰ The "system" in its entirety is broader than that.

The specification as a whole supports the understanding that an igniter can be part of the generating system. As seen in the quotations above, the specification details how the piezoelectric igniter is used in the depicted embodiment. Further, the igniter (item 86), and/or its manual push-button (item 88), is included in several Figures illustrating the apparatus. See '243

²⁰ For example, the system detailed in the '243 patent specification includes a thermoelectric module that uses heat from the combustion chamber to generate electricity. See, e.g., '243 Patent, col. 6, lines 4-30; col. 7, lines 46-65.

Patent, Figs. 1-5, 7.

The plain claim language and the specification unambiguously indicate that an apparatus covered by the claimed invention may have an igniter, even one that uses an electrical spark. Nevertheless, the respondents argue that the prosecution history prevents claim 32 from reading on an apparatus that requires an igniter. It is argued that original claim 34²¹ read on the embodiment described in the specification, although it required only that the power requirements of the “trap” be provided by the hydrocarbon-fueled generating system. According to the respondents, the claim was amended, and now requires that the generating system supply power for the entire trapping apparatus, of which the trap is only part. Thus, the respondents argue, the Examiner might have lost track of claim coverage during the amendment process, and in any event, claim 32 should be interpreted to exclude the embodiment detailed in the specification. See Respondents’ Post-Hearing Brief at 15 (citing *Elekta Instrument S.A. v. O.U.R. Scientific Int’l, Inc.*, 214 F.3d 1302, 1308 (Fed. Cir. 2000)).

In the *Elekta* decision, relied upon by the respondents, the Federal Circuit was “compelled” to exclude the preferred and only embodiment detailed in the patent specification due to “the prosecution history and the unambiguous language of the amended claim.” 214 F.3d at 1308. In doing so, however, the court stated that “[s]uch an interpretation is rarely, if ever, correct and would require highly persuasive evidentiary support.” *Id.* (quoting *Vitronics*, 90 F.3d at 1583). Subsequently, in the *Amgen* case (discussed in note 12), the Federal Circuit reiterated its admonition that such a claim interpretation is rarely, if ever, correct, and in that case

²¹ Original claim 34, as amended, issued as claim 32 of the ‘243 patent. See ‘243 Patent Prosecution History (CX-3) at ABC011770.

did not find the “persuasive evidentiary support” needed to read the preferred embodiment out of the claims. The Federal Circuit observed that it had done so only once, and that was in its *Elektro* decision. See *Amgen* 314 F.3d at 1349.

With respect to the ‘243 patent, an amendment did change the term “trap” to “trapping apparatus,” as observed by the respondents. However, the respondents’ argument that such an amendment precludes claim 32 from reading on an apparatus with an igniter is based on a supposed substantial distinction between the terms “trap” and “trapping apparatus” that is not apparent from a comparison of original claim 34 and issued claim 32. Further, the amendment to original claim 34 far exceeded the modification of “trap” to “trapping apparatus,” and in explaining the amendment to the Examiner, the applicants stated nothing about changing the electrical requirements to be fulfilled by the generating system. In their Remarks, the applicants stated: “Claim 34 has been amended to depend on claim 1 and to more clearly point out that the combustion chamber is part of the hydrocarbon fueled generating system.” ‘243 Patent Prosecution History (CX-3) at ABC011773.

Moreover, even if the amendment had changed the requirements of the claim with respect to the scope of the electrical requirements, it would remain unclear why claim 32 should be interpreted so as to read out a device that required the type of starter or igniter used by the embodiment detailed in the specification; and it remains unclear why an igniter should be excluded from the generating system as a whole.

The evidence does not compel, or support, a construction of claim 32 that reads out an igniter apparatus that is detailed in the ‘243 patent specification.

IV. INFRINGEMENT DETERMINATION

Infringement must be proven by a preponderance of the evidence. *Enercon GmbH v. Int'l Trade Comm'n*, 151 F.3d 1376 (Fed. Cir. 1998). Literal infringement of a claim occurs when every limitation recited in the claim appears in the accused device, i.e., when "the properly construed claim reads on the accused device exactly." *Amhil Enters., Ltd. v. Wawa, Inc.*, 81 F.3d 1554, 1562 (Fed. Cir. 1996); *Southwall Tech. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed. Cir. 1995).

If the accused product does not literally infringe the patent claim, infringement might be found under the doctrine of equivalents. The Supreme Court has described the "essential inquiry" of the doctrine of equivalents analysis as follows: "[D]oes the accused product or process contain elements identical or equivalent to *each* claimed element of the patented invention?" *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 40 (1997). Under the doctrine of equivalents, infringement may be found if the accused product or process performs substantially the same function in substantially the same way to obtain substantially the same result. *Valmont*, 983 F.2d 1039, 1043 (Fed. Cir. 1993). The doctrine of equivalents does not allow claim limitations to be ignored. Evidence must be presented on a limitation-by-limitation basis, and not for the invention as a whole. *Warner-Jenkinson*, 520 U.S. at 29; *Hughes Aircraft Co. v. U.S.*, 86 F.3d 1566 (Fed. Cir. 1996). Thus, if an element is missing or not satisfied, infringement cannot be found under the doctrine of equivalents as a matter of law. See, e.g., *Wright Medical*, 122 F.3d 144, 1444 (Fed. Cir. 1997); *Dolly, Inc. v. Spalding & Evenflo Cos., Inc.*, 16 F.3d 394, 398 (Fed. Cir. 1994); *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538-39 (Fed. Cir. 1991); *Becton Dickinson and Co. v. C.R. Bard, Inc.*, 922 F.2d 792, 798

(Fed. Cir. 1990).

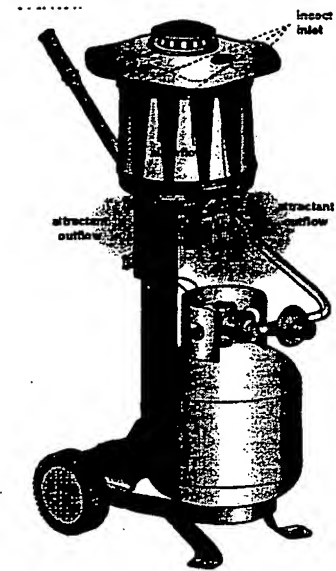
The scope of equivalents accorded an element is limited by prosecution history either through amendments to the claims or arguments made in support of patentability during prosecution of the application that eventually matured into the patent at issue. Thus, the patentee cannot use the doctrine of equivalents to obtain coverage of subject matter relinquished during prosecution of the application. *Festo I*, 535 U.S. at 734; *Wang Laboratories, Inc. v. Mitsubishi Electronics America, Inc.*, 103 F.3d 1571, 1577-1578 (Fed. Cir. 1997); *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki*, 344 F.3d 1359, 1365-67 (Fed. Cir. 2003) (*en banc*) (“*Festo II*”).

However, the patentee may obtain coverage of equivalents unforeseeable at the time of the amendment and beyond a fair interpretation of what was surrendered, or for aspects of the invention that have only a peripheral relation to the reason the amendment was submitted. *Festo I*, 535 U.S. at 738; *Festo II*, 344 F.3d at 1369. In order to obtain coverage under the doctrine of equivalents, the patentee must show that at the time of the amendment, one skilled in the art could not reasonably be expected to have drafted a claim that would have literally encompassed the alleged equivalent. *Festo I*, 535 U.S. at 741.

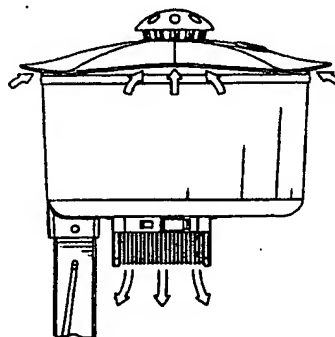
A. Claim 1

With respect to claim 1 of the ‘243 patent, the parties stipulated that the only contested limitation pertains to “the attractant exhaust system being structured and arranged to cool heated CO₂ gas and to release an insect attractant comprised of the cooled CO₂ gas near the trap inlet.” A similar stipulation has been reached with respect to the products relied upon by the complainant to satisfy the domestic industry requirement of section 337. Tr. 200-201.

The illustration to the right is representative of the accused 2004 SkeeterVac models. This illustration was taken from the complainant's main brief. *See* Complainant's Post-Hearing Brief at 18. Although the labels and arrows indicating airflows might be disputed by the parties, this illustration presents a fairly accurate depiction of the device's general appearance.



The line drawing below is taken from the respondents' main brief. *See* Respondents' Post-Hearing Brief at 19. Although the arrows indicating airflows might be disputed by the parties, this illustration presents a more detailed view of the portion of 2004 SkeeterVac in which the exhaust and the inlets are located.



The complainant argues that respondents' 2004 SkeeterVac models literally infringe claim 1 of the '243 patent. The complainant makes no argument concerning claim 1 and the doctrine of equivalents. *See* Complainant's Post-Hearing Brief at 18-20; Complainant's Reply Brief at 14-16; Complainant's PFF Section III B, PCL 1-12.

The complainant acknowledges, and indeed it is without controversy among the parties, that CO₂ gas is released from the bottom (or WaveDrawer) of the trap body, and that the trap inlet is located toward the top of the trap body (beneath the lid of the device) at a distance of 9 to 11 inches from the point of CO₂ gas release, depending upon the precise points of measurement. *Compare* Complainant's Post-Hearing Brief at 18-19 *with* Respondents' Post-Hearing Brief at 18.

The complainant argues that the distance of 9 to 11 inches between the exhaust and trap inlet in the accused 2004 SkeeterVac device is "near," within the meaning of claim 1, relying upon four grounds. First, it is argued that as admitted by Blue Rhino on its Internet website, the release of gas acts as an attractant is close enough to the trap inlet for insects to be captured. Second, mosquitos typically orient upwind toward a source of carbon dioxide, with excursions exceeding 11 inches. The complainant thus concludes that within the context of mosquito behavior, the release point is "near" the trap inlet in the accused devices.

It further argues that a person of ordinary skill would consider 11 inches to be "near" given the Skeeter-Eater prior art teaching of placing that attractant device within one foot of a trap. Finally, the complainant states that the distance between the WaveDrawer and the trap inlet on the accused devices is sufficiently small to satisfy one of the main purposes of the claimed invention, which, as stated in the specification, is to provide a "stand-alone, portable" insect trap. *See, e.g.,* Complainant's Post-Hearing Brief at 18-20; Complainant's Reply Brief at 14-26.

The respondents argue that the accused 2004 SkeeterVac products do not infringe claim 1 of the '243 patent because the devices do not have a carbon dioxide gas outlet extending about three inches below a concentric trap inlet, or any equivalent thereof, and further that the accused

devices do not use counterflow. In addition, it is argued that even under the complainant's proposed claim construction, there is a lack of proof of infringement.²² *See, e.g.,* Respondents' Post-Hearing Brief at 18-23; Respondents' Reply Brief at 15-18.

The Commission Investigative Staff also argues that the accused products do not infringe claim 1 of the '243 patent, primarily on the grounds that the traps are not counterflow devices, and that the inlets on the accused devices are neither contiguous to the outlets, nor do they surround the outlets. *See, e.g.,* OUII Post-Hearing Brief at 34-35.

As detailed in Section III A, concerning the proper construction of claim 1, devices need not use counterflow or have concentric inlet and exhaust openings in order for the devices to infringe. Further, although the '243 patent teaches that an exhaust and an inlet about three inches apart are "near" each other for the purposes of claim 1, three-inches is not itself a precise claim limitation. Thus, the fact that the accused 2004 SkeeterVac products do not exhibit those features does not determine whether or not they infringe claim 1 of the '243 patent.

The fact that the point of CO₂ gas release (or exhaust) and the trap inlet are 9 to 11 inches apart is relevant to the question of infringement. While three inches is only the distance of the embodiment detailed in the specification, it is nonetheless remarkable that the distance in the

²² The accused 2004 SkeeterVac product has light-emitting diodes, contrasting patterns of black and white, octenol released from the top of the trap, and a "heat signature" and "sticky paper" around the trap body. The respondents believe that these features facilitate the attraction or capture of mosquitoes. *See* Apperson Tr. 442-446. They argue that the presence of these features may complicate an understanding of how their traps actually work. However, they have not relied on the mere existence of these additional features to argue a lack of infringement. *See* Respondents' Post-Hearing Brief at 21. Indeed, the law generally provides that one cannot avoid infringement by adding features or further elements, if the limitations of a claim are also satisfied. *See A.B. Dick Co. v. Burroughs Corp.*, 713 F.2d 700, 703 (Fed. Cir. 1983)("[O]ne cannot avoid infringement merely by adding elements if each element recited in the claims is found in the accused device.").

accused devices is at a minimum three times greater, and in some instances almost four times the distance described in the patent specification. Thus, the exhaust and trap inlet are not near each other in terms of inches, if one takes the dimensions given in the specification as a guide.

In addition, the exhaust and trap inlet are not near each other in relation to the apparatus as a whole or in relation to each other. The location of the trap inlet does not define the point of release for the CO₂ gas or indicate that the CO₂ gas is released nearby. The CO₂ gas is released at the bottom of the trap body, and the trap inlet is under the lid at the top. The exhaust and trap inlet in the accused devices is almost as far apart as the physical structure of the trap body would allow.

The concepts of distance between the exhaust and inlet in terms of inches, distance from each other, or distance on the body of the trap all find support in the patent claims, specification and PTO record. The '243 claims, as supported by the specification, cover an apparatus for trapping insects (with mosquitoes and sand flies mentioned in particular), not all manner and size of pests. The examples of the '243 patent specification mention stand-alone, portable devices that are powered by an ordinary propane tank. While those features are not limitations to be read into the claims, the '243 patent provides a context for the claims. Given the scale of the claimed invention, locating the exhaust and trap inlet "near" each other is for all practical purposes the same as locating them a few inches apart.

Consequently, by any measure of nearness indicated in the '243 patent, the exhaust and the trap inlet in the accused devices are not near. Rather they are far apart, almost as far apart as the devices will allow.

The complainant argues that because Blue Rhino admits on its website that insects are

trapped after being attracted by the CO₂ gas, the exhaust and trap inlet must be “near” each other as required by claim 1 of the ‘243 patent. First, such statements by Blue Rhino do not constitute admissions of nearness. Furthermore, no evidence in the form of tests or demonstrations was presented about how the accused traps actually trap insects, whether insects are attracted by the gas released by the 2004 SkeeterVac, how insects behave around the trap, or whether in fact the traps work at all to capture insects. *See* Neitzel Tr. 218, 322. The question of how and why a trap works differs from the question of whether the exhaust and inlet are “near.” In addition, to say that a product infringes because it works is a tautology. The patent covers devices where the trap inlet is “near” the outflow; it does not cover devices because they work.

Similarly, the complainant seeks to read into claim 1 entomological knowledge about the “excursions” or meanderings of insects, especially mosquitos, as they follow or approach an attractant gas. Whether or not, and to what extent one of ordinary skill would have such knowledge, the overriding problem is that there is nothing in the claim language and very little in the other intrinsic evidence that even hints at such a methodology, including the use of particular mosquito behavior to determine the “near” limitation. Even the evidence concerning meandering does not establish that a meandering insect would meander into a trap inlet without counterflow, or be caught in counterflow, some 9 to 11 inches away from the point of CO₂ gas release. *See* Cardé Tr. 131-132, 173, 183-194; Neitzel Tr. 326.

Concepts that the complainant would import into claim 1 such as insect excursions and the efficacy of the devices cannot be read into the simple term “near” or its surrounding clause. That language requires – as the complainant argued – that the exhaust and trap inlet must be close to each other, which is not synonymous with whether mosquitos meander in excess of 11

inches. Claim 1 is simply not written in such terms, and it is unclear whether the sorts of ranges that the complainant would read into that term could be squared with the teachings of a three-inch distance in the detailed embodiment of the '243 patent specification.

Finally, there is the question of the one-foot range, also adopted by the complainant, based on the Skeeter-Eater device. This attractant-generating device did not in fact include an insect trap. There is no indication that one of ordinary skill would rely on the instructions that came with a Skeeter-Eater to determine the distance between the exhaust and trap inlet on an apparatus covered by claim 1.

Therefore, for the reasons discussed above, it cannot be found by a preponderance of the evidence that the accused 2004 SkeeterVac products infringe claim 1 of the '243 patent.

B. Claim 32

Infringement exists only if all claim limitations exist with respect to each accused product. *See, e.g., Elekta*, 214 F.3d at 1306. Consequently, if an independent claim is not infringed, the claims that depend from it cannot be infringed. *See, e.g., Jeneric/Pentron, Inc. v. Dillon Co.*, 205 F.3d 1377, 1383 (Fed. Cir. 2000); *Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1553 (Fed. Cir. 1989). Inasmuch as independent claim 1 is not infringed by the accused insect traps, claim 32 cannot be infringed because it depends from claim 1.

If the accused insect traps satisfied all the limitations of claim 1, a question would be raised by the respondents' arguments as to whether the traps also satisfy the further limitations of claim 32, which read on an apparatus that "requires electric power to operate, wherein the combustion chamber is part of a hydrocarbon fueled generating system providing all the electric power requirements of the trapping apparatus." It is undisputed that the 2004 SkeeterVac models

use an igniter battery. *See, e.g.,* Complainant's Post-Hearing Brief at 21; Respondents' Reply Brief at 17.

As discussed above (in Section III B) in connection with the proper construction of claim 32, claim 1 may read on a device even though it uses an igniter. In fact, the '243 patent detailed the use of a piezoelectric igniter. In the accused devices, as in the specification's embodiment, once combustion begins, a thermoelectric module supplies the electricity needed to run the apparatus, including lights and fans. *See* Neitzel Tr. 224-228, 257-259, 270-271.

Consequently, it has been shown by a preponderance of the evidence that the accused 2004 SkeeterVac products satisfy the additional limitations added by dependent claim 32 of the '243 patent, and would infringe that claim if they also infringed independent claim 1.

V. VALIDITY

A patent is presumed to be valid. 35 U.S.C. § 282; *DMI Inc. v. Deere & Co.*, 802 F.2d 421 (Fed. Cir. 1986). Although a complainant has the burden of proving a violation of section 337, it can rely upon the presumption of validity, which a respondent must overcome by clear and convincing evidence. *Checkpoint Systems, Inc. v. United States Int'l Trade Comm'n*, 54 F.3d 756, 761 (Fed. Cir. 1995). The introduction of prior art that was not before the Examiner may facilitate the challenger's burden of proving patent invalidity. However, the presumption of validity remains intact and on the challenger throughout a case, and the clear and convincing standard does not change. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1375 (Fed. Cir. 1986).

The respondents argue that at least under the complainant's proposed interpretation, claim 1 and/or claim 32 of the '243 patent is invalid pursuant to 35 U.S.C. § 112 as indefinite,

35 U.S.C. § 102 as anticipated, and 35 U.S.C. § 103 as obvious. Each of these grounds is discussed.

A. Indefiniteness

Section §112, paragraph 2 provides in pertinent part that “[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” “The test for definiteness is whether one skilled in the art would understand the bounds of the claim when read in light of the specification. * * * The degree of precision necessary for adequate claims is a function of the nature of the subject matter.” *Miles Laboratories, Inc. v. Shandon Inc.*, 997 F.2d 870, 875 (Fed. Cir. 1993), *cert. denied*, 510 U.S. 1100 (1994); *accord Intellectual Prop. Dev. Inc. v. UA-Columbia Cablevision, Inc.*, 336 F.3d 1308, 1322 (Fed. Cir. 2003)(The requirement is satisfied if “those skilled in the art would understand what is claimed when the claim is read in light of the specification.”).

The respondents argue that claim 1 of the ‘243 patent would be invalid due to a lack of definiteness under the complainant’s proposed interpretation of the term “near.” *See, e.g.*, Respondents’ Post-Hearing Brief 28-32. As discussed in Sections III and IV, the complainant’s proposed interpretation has not been adopted. Nevertheless, the respondents raise questions with respect to the claim term “near” that should be addressed.

The term “near” is a relative term, and relative terms may be used effectively in patent claims when one of ordinary skill, in view of the specification, would understand what is claimed, even if some experimentation is needed. *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1557 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). *See also Andrew Corp.*

v. *Gabriel Electronics, Inc.*, 847 F.2d 819, 821-22 (Fed. Cir. 1988)(finding the claim terms “approach each other,” “close to,” “substantially equal” and “closely approximate” to be “ubiquitous in patent claims” and not indefinite);²³ *Rosemount, Inc. v. Beckman Instruments, Inc.*, 727 F.2d 1540, 1546-48 (Fed. Cir. 1984)(finding the claim term “close proximity” to be as precise as the subject matter permits and not indefinite).²⁴

The respondents argue that in several instances, the complainant’s witnesses had difficulty defining the term “near,” and its expert on mosquito behavior testified that one of ordinary skill would have to observe the behavior of many mosquito species, and conduct many

²³ In its *Andrew Corp.* opinion, the Federal Circuit stated:

In *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, No. 87-1296, 842 F.2d 1275, 1280, 6 USPQ2d 1277, 1282 (Fed.Cir.1988), this court stated that an “imprecise claim limitation, such as the phrase ‘about 100% per second’” does not impart invalidity to the claims, but is to be considered in determination of infringement. *See also Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1385, 231 USPQ 81, 95 (Fed.Cir.1986) (“the claims, read in light of the specification, reasonably apprise those skilled in the art and are as precise as the subject matter permits. As a matter of law, no court can demand more”), *cert. denied*, — U.S. —, 107 S.Ct. 1606, 94 L.Ed.2d 792 (1987)

The Manual of Patent Examining Procedure instructs examiners in a similar vein. *See* MPEP § 706.03(d):

[An examiner] should allow claims which define the patentable novelty with a *reasonable* degree of particularity and distinctness. Some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire.
[emphasis in original]

847 F.2d at 821-22.

²⁴ The complainant also points out that much of the prior art considered by the Examiner during prosecution of the ‘243 patent used relative terms in patent claims that did not explain the relationship with mathematical precision. *See* Complainant’s Reply Brief at 3; CPFF 792-795, 798-799.

experiments with the relationship between a trap inlet and outlet, in order to ascertain whether an exhaust and trap inlet were “near” enough to capture insects on a routine basis. *See* Respondents’ Post-Hearing Brief at 29. Such performance-based criteria would indeed be problematic for one of ordinary skill, and for the validity of the patent claims. *See* Cardé Tr. 191-195 (in which the witness, in response to Staff questioning, discussed the concept of “near” or “near enough” in view of the large variance in mosquito behavior). However, such criteria have been rejected by the Administrative Law Judge as a basis for construing claim 1. The Administrative Law Judge has also rejected the complainant’s criterion of “within one foot,” which was reiterated by the complainant on the subject of definiteness, *see* Complainant’s Reply Brief at 45, yet which is derived from a significantly different type of apparatus (i.e., the Skeeter-Eater).

As analyzed in Section III, the intrinsic evidence surrounding claim 1 of the ‘243 patent indicates that whether or not the exhaust and trap inlet are “near” should be evaluated in terms relative to the apparatus – with the understanding that release and inlet openings may extend beyond the body of the trap on pipes or tubes, in which case, one should examine the closeness of the actual point of release and the trap inlet, rather than simply refer to the main trap body. Furthermore, the intrinsic evidence indicates that the point of attractant release is defined by its proximity on the apparatus to the trap inlet (not merely the distance between two different devices as in the Skeeter-Eater prior art), and additionally, a distance of about three inches is provided as an example of such proximity by the ‘243 patent specification.²⁵ Thus, given the

²⁵ Given the claim language and intrinsic evidence, it is clear that the placement of the exhaust and trap inlet 9 to 11 inches apart, nearly as far apart as possible on a device – the outlet
(continued...)

level of ordinary skill and the relevant art (*see* p. 7 above), the '243 patent provides sufficient information so that one of ordinary skill can understand the bounds of the claimed invention, including whether or not an exhaust and trap inlet are "near."

There is not clear and convincing evidence that claim 1 of the '243 patent is invalid due to a failure to comply with 35 U.S.C. § 112, ¶ 2.

B. Anticipation

A claim is anticipated, and therefore invalid, if a single prior art reference discloses each and every limitation of the claim. *Bard v. M3 Systems*, 157 F.3d 1340, 1349 (Fed. Cir. 2000); *Celeritas Technologies, Ltd. v. Rockwell Int'l*, 150 F.3d 1354, 1361 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1106 (1999). The single reference must disclose "each and every element of the claimed invention, arranged as in the claim." *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

A prior art reference may anticipate a patent claim without expressly disclosing a feature of the claimed invention, if that missing characteristic is "inherent" in the single anticipating reference. In order to be "inherent," the characteristic must be "necessarily present" in the anticipating reference. A challenger need not show that a person of ordinary skill in the art would have recognized the inherent characteristic in the prior art before the critical date of the patent. The law allows for later recognition of the inherent characteristic. *Schering Corp. v. Geneva Pharmaceuticals, Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003); *EMI Group North America, Inc. v. Cypress Semiconductor Corp.*, 268 F.3d 1342, 1350-51 (Fed. Cir. 2001).

²⁵ (...continued)
on the bottom and the inlet on or close to the top – is an example of an exhaust and trap inlet that are not "near" each other.

The law of anticipation does not require that the reference “teach” the subject matter of the patent. It is necessary only that the claims being challenged, as construed by the court, “read on” something disclosed in the reference. Thus, the question of whether a reference “teaches away” from the invention is inapplicable to an anticipation analysis. *Celeritas*, 150 F.3d at 1361. A reference that discloses all claim limitations anticipates the claimed invention even if that reference disparages the subject matter of the claim. See *Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1378 (Fed. Cir. 2001)(citing *Celeritas*, 150 F.3d at 1361).

Anticipation is a question of fact, which like other questions pertaining to alleged invalidity, must be established by clear and convincing evidence. *Glaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1047 (Fed. Cir.), *cert. denied*, 516 U.S. 988 (1995); *Scripps Clinic & Research Found. v. Genentech Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991).

The respondents argue that at least claim 1 of the ‘243 patent is invalid as anticipated:

(1) under 35 U.S.C. § 102(b), by Australian published Application Au-A-11632/95, “Insect Trap,” which lists John Meili as the inventor. RX-5 is a copy of “Meili”; and

(2) under 35 U.S.C. § 102(g)(2), by the so-called “Stevens invention,” as described in a two-paragraph letter with diagram, dated October 16, 1996, which was sent to a U.S. Dept. of Agriculture official, Dr. Daniel Kline, and allegedly reflects a device made in this country by Mr. David Stevens, an employee of Flowtron Outdoor Products, a division of Armatron International, Inc., of Melrose, Massachusetts. RX-75 is a copy of the Stevens letter and diagram.

See, e.g., Respondents’ Post-Hearing Brief at 29-36.

The complainant opposes these arguments. See, e.g., Complainant’s Reply Brief at 20-21, 22-23.

1. The Meili Application

The brief Abstract of the Meili Australian (published) patent application refers to:

An apparatus for trapping and killing flying insects, especially midges. The apparatus preferably comprises an attractant such as a light source, carbon dioxide source, or warmed zone, a fan and a killing means such as a liquid trap. The attractant means draws the insects to a position proximate the fan whereby they are drawn into the killing means and killed.

Meili (RX-5) at SV009077.

The respondents argue that the Meili application discloses all elements of claim 1 of the '243 patent, as construed by the complainant (or by the respondents, except for counterflow), and that therefore claim 1 would be invalid pursuant to section 102(b) of the Patent Act.²⁶

It should again be noted that the Administrative Law Judge has not adopted the complainant's proposed interpretation of claim 1 – although neither the Administrative Law Judge's construction nor the complainant's proposal reads counterflow or concentric exhaust and inlet tubes into the claim. Further, the respondents do not appear to argue that Meili anticipated claim 32, nor could Meili anticipate that claim, inasmuch as Meili lacks an element to supply electrical power to the apparatus (such as combustion combined with a thermoelectric module).

²⁶ The Patent Act provides in pertinent part:

A person shall be entitled to a patent unless -

* * *

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States

35 U.S.C. § 102 (b).

The Administrative Law Judge has examined the evidence and arguments pertaining to Meili. When comparing Meili to the '243 patent, and especially claim 1, an immediately discerned difference between the two is the relative lack of information concerning the point of release of CO₂ gas from a device covered by the Meili claims, including the Meili preferred embodiment with its drawings. Meili explains that a chamber in the apparatus is filled with warm carbon dioxide, although it does not explain how the gas is released. The complainant acknowledges, based upon the testimony of its expert, that one of ordinary skill would, of course, understand that the gas would escape to the outside. *See, e.g.*, Complainant's Reply Brief at 20. Yet, Meili does not explicitly require the type of exhaust system required by claim 1 of the '243 patent, and little detail is provided in the Meili specification about the release of carbon dioxide from the trap.

In the Meili embodiment, the burning of liquid petroleum gas ("LPG") produces a discharge of CO₂ gas and other "constituents being normally found in the expelled air of warm blooded animals." *See* RX-5 at SV009081. According to the Meili specification, as the LPG is burned, a chamber (labeled 22) is filled with "warm carbon dioxide and/or bait attractant 23." *See* RX-5 at SV009082. This chamber is also apparently the same as "the warmed zone heated to a temperature warmer than the surrounding atmosphere" *See* RX-5 at SV009079-9080; Respondents' Post-Hearing Brief at 30.

Although Meili discloses "warm carbon dioxide" and a "warmed zone" heated above ambient temperature, the respondents' expert testified that CO₂ gas is in fact cooled as it rises through a pipe in the Meili trap, and further that in some configurations, it can be mixed with air from outside the trap. *See* Humphrey Tr. 528-529. Even assuming that is so, there is no

statement in Meili or evidence about a particular temperature, or range of temperatures, of the CO₂ gas *at the point of release from the trap*.

The most direct argument made by the respondents about how one can be sure that Meili releases attractant gas at the temperature required by the '243 patent is that it teaches that the attractant gas mimics the breadth of warm blooded animals; and thus, they argue, the gas must be released at a temperature below 115° F. The respondents also rely on Meili's desire to lure insects so that they will be caught in the trap's suction intake. *See, e.g.,* Respondents' Reply Brief at 19.

It is not enough to say that because Meili wanted to lure insects, and many insects are lured by CO₂ gas in the temperature range specified by the '243 patent, Meili must have disclosed the release of CO₂ gas in that range.²⁷ The pertinent question is whether Meili described the claimed subject matter "sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it." *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990); *see also Rockwell Int'l Corp. v. United States*, 147 F.3d 1358, 1364 (Fed. Cir. 1998)(enabling disclosure required).²⁸ Nowhere does Meili specify the temperature range that claim 1 of the '243 patent uses as a limitation (i.e., above ambient temperature and below approximately 115° F) or disclose an equivalent concept other than the broad reference to a discharge with some "constituents" found in air expelled by warm-blooded animals. Further, the information

²⁷ Furthermore, it is noted that when Meili discusses the similarities between the attractant gas and the breath of animals, temperature is not discussed. *See* RX-5 at SV009081.

²⁸ In order to anticipate, prior art must enable without undue experimentation by one of ordinary skill in the art. *See Elan Pharms., Inc. v. Mayo Found.*, 346 F.3d 1051, 1054-55 (Fed. Cir. 2003).

concerning the exhaust of gases from the trap, from which one might determine temperature, is scant at best.²⁹

Therefore, there is not clear and convincing evidence that the Meili application anticipated claim 1 of the '243 patent.

2. The So-Called "Stevens Invention" and 35 U.S. § 102(g)(2).

The respondents argue that pursuant to 35 U.S.C. § 102(g)(2), at least claim 1 of the '243 patent was anticipated by the so-called "Steven invention," a two paragraph letter with an attached diagram, dated October 16, 1996, from a Mr. David Stevens (who worked for a division of Armatron International, Inc., of Melrose, Massachusetts³⁰) to a USDA official. The device described in the letter is also supposed by the respondents to have been reduced to practice.

The complainant opposes the respondents' arguments.

Section 102(g)(2) of the Patent Act provides that a person shall not be entitled to a patent if:

[B]efore such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the

²⁹ In the embodiment detailed in the Meili specification, no mention is made of the temperature of the carbon dioxide as it reaches the outside of the trap, and no dimensions are given for the trapping apparatus. There is no information about the length or circumference of the pipe through which CO₂ rises. *See* RX-5. Therefore, estimates of the temperature of the CO₂ gas exiting a Meili apparatus might differ, and in fact be based upon conjecture. *Cf. W.L. Gore*, 721 F.2d at 1554 (Anticipation "cannot be predicated on mere conjecture respecting the characteristics of products that might result from the practice of processes disclosed in references. ").

³⁰ This is apparently the same company that requested reexamination of the '243 patent. *See* Section III, *supra*; CX-5.

reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

35 U.S.C. § 102(g)(2).

As explained by the Federal Circuit, this provision provides that priority of invention should be attributed to the first party to reduce an invention to practice, unless the other party shows prior conception of the invention and reasonable diligence in reducing the invention to practice. *Cooper v. Goldfarb*, 154 F.3d 1321, 1327 (Fed. Cir. 1998). As further explained in the *Cooper* opinion:

Conception is the formation, in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice. *See Hybritech*, 802 F.2d at 1376, 231 U.S.P.Q. [81] at 87 (citing *Coleman v. Dines*, 754 F.2d 353, 359, 224 U.S.P.Q. 857, 862 (Fed.Cir.1985)). A reduction to practice can be either a constructive reduction to practice, which occurs when a patent application is filed, or an actual reduction to practice. *See Hybritech*, 802 F.2d at 1376, 231 U.S.P.Q. at 87.

Id.

Proof of conception and actual reduction to practice (if required) may be based on inventor testimony. However, such testimony must be corroborated by independent evidence, which is evaluated under a “rule of reason” analysis. *Loral Fairchild Corp. v. Matsushita Elec. Indus. Corp. Ltd.*, 266 F.3d 1358, 1363 (Fed. Cir. 2001); *Finnigan Corp. v. United States Int’l Trade Comm’n*, 180 F.3d 1354, 1366-69 (Fed. Cir. 1999). Under the rule of reason, “[a]n evaluation of all pertinent evidence must be made so that a sound determination of the credibility of [the evidence] may be reached.” *Price v. Symsek*, 988 F.2d 1187, 1195 (Fed. Cir. 1993). Inventor testimony can be corroborated by documents from the inventor’s own files. *Knorr v. Pearson*, 671 F.2d 1368, 1374 (C.C.P.A. 1982)(“The law does not impose an impossible

standard of 'independence' on corroborative evidence by requiring that every point [necessary to prove invalidity] be corroborated by evidence having a source totally independent of the inventor; indeed such a standard is the antithesis of the rule of reason.'').

In this instance, the Stevens letter and hand drawn diagram, relied upon by the respondents, consists of two pages, with the letter containing only the two following paragraphs:

Hello Dan!

Here's the new unit. As you can see, there are some small but significant changes.

First of all, there are two chambers in the CO2 generator . . . an inner and an outer. The inner chamber surrounds the catalyst, and captures the hot gases. A small blower on the top directs these through a copper tube and into the grid area on the right hand side. The outer chamber has a large blower on top that helps to cool the inner chamber and the copper tube, so the CO2 exits at about 100° F. The cooling air exists at the back of the unit, away from the CO2 stream.

To use the unit, first insert the butane so that the bottom of the can is between 3/8" and 1/2" of the bottom the unit. You may have to push firmly on the can to do this. There is enough friction so that the can will remain seated without any external support. When you plug the unit in, the light should come on, the valve begin clicking fairly rapidly (100 per min or so), and the blower should come on, exhausting at the back. If there is no light, check the bulb for proper insertion. If there is no clicking, remove and replace the butane can two or three times.

RX-75 at 1.

The respondents argue that they "met their burden of proof under section 102(g)(2) by showing that the Stevens invention is the same as disclosed in Claim 1 of the '243 patent and that Mr. Stevens made the device in this country." See Respondents' Post-Hearing Brief at 33 (citing Stevens Dep. (RX-447) Tr. 62-65).

There are two primary areas of disagreement between the complainant and the

668-671). There is no evidence (e.g., based on the deposition or hearing testimony of any witness) as to the temperature of the CO₂ gas released from the device that supposedly constituted the necessary reduction to practice.

Further, while the respondents' expert witness noted the portions of the Stevens device that would allow CO₂ gas to cool before release, in the final analysis, he, too, had to rely upon a simple statement in Mr. Stevens' letter. The respondents' expert testified, as follows:

At a temperature above ambient. Because of combustion. And below approximately 115 degrees Fahrenheit.

One might ask, how do we know that this is 115 degrees Fahrenheit. I think there's a reference to that in the text. The intent is heat is expressed here, that the CO₂ should exit at about 100 degrees Fahrenheit.

So it seems to me that the Stevens device practices all the limitations of this claim.

BY MR. CONNOR:

Q Dr. Humphrey, doesn't it also expressly indicate that the CO₂ gas should be cooled so as to reach this temperature of about 100 degrees Fahrenheit?

A It does say that.

Q In the text?

A Yes.

Q Okay. So is it your opinion that all of the elements of claim 1 are described in this Stevens letter?

A It is my opinion that they are.

Humphrey Tr. 539-540 (emphasis added).

The respondents rely on the fact that in some situations, the burden of production shifts to the patentee to produce evidence of abandonment, suppression or concealment. *See* Respondents' Post-Hearing Brief at 35-36. However, in an infringement action that shift occurs

respondents. First, there is a question as to whether Mr. Stevens' alleged invention, and particularly the device relied upon, released CO₂ gas within the temperature range required by claim 1. Second, there is a question as to whether Mr. Stevens conceived of his device before the inventors of the '243 patent invention, Mr. Wigton and Mr. Miller. In a related matter, there is a question as to whether the Stevens device was abandoned, suppressed or concealed, even if Mr. Stevens had the earlier conception.

Mr. Stevens wanted CO₂ gas to exit his device "at about 100° F." He said so in his letter to Dr. Kline at the USDA. A temperature of about 100° F would, in many cases, be above ambient temperature, yet also below 115° F. The complainant has not contested the fact that such a temperature would be within the range of claim 1 of the '243 patent. However, the complainant has questioned whether the device described in Mr. Stevens' letter would actually operate in that manner, and thus whether the device that Mr. Stevens built operated in that manner and reduced that claim element or limitation to practice. There is in fact no evidence about the temperature at which the Stevens device operated, other than the fact that Mr. Stevens wanted it to operate in a certain range. Thus, there is no evidence that he actually made a device that reads on the patent.

The Stevens letter supplies a diagram of his device or idea for a device that does not provide specifications such as dimensions. The respondents point to the fact that the complainant's expert acknowledged that Mr. Stevens desired the temperature of the CO₂ gas upon release to be about 100° F. However, the complainant's expert never testified that the letter disclosed a device that would release the gas at about 100° F, or that the device made by Mr. Stevens did so. *See* Respondents' Post-Hearing Brief at 33 (quoting portions of Neitzel Tr.

only if “the challenger (analogous to the first-to-invent in the interference context) has established prior invention by clear and convincing evidence.”³¹ *Apotex USA, Inc. v. Merck & Co., Inc.*, 254 F.3d 1031, 1037 (Fed. Cir. 2001). The respondents have made no such showing, and the burden of production should not shift to the complainant. Nevertheless, the complainant produced evidence, and further, made a strong case that the work referred to in the October 16, 1996 letter from Mr. Stevens to Dr. Kline was in fact abandoned, suppressed and concealed.

The device described in Mr. Stevens’ October 16, 1996 letter was “basically, just an experiment more than anything else,” having to do with the reaction of insects to CO₂ gas as an attractant. Mr. Stevens made only one such trap and sent it only to Dr. Kline. Stevens Dep. (RX-447) Tr. 68-69. Mr. Stevens did not show the trap to anyone other than persons at the company where he worked. He had confidence that Dr. Kline would consider the experimental trap to be proprietary, and would not disclose it to anyone else. Stevens Dep. (RX-447) Tr. 61-62, 68-69. The device described in the letter dated October 16, 1996 was never used in public or placed on sale. The device did not work effectively, and it did not look like a device that was suitable for commercial marketing. Stevens Dep. (RX-447) Tr. 68-70.

After the device in question was tested by Dr. Kline, Mr. Stevens may have made some small changes to the design. Mr. Stevens cannot recall if Dr. Kline ever returned the trap that he tested. He thought that he once had another trap that was similar to the device that he sent to Dr.

³¹ The burden to produce evidence “bears a rough similarity to placing the burden of proving suppression or concealment on the second-to-invent under interference law, but at the same time is appropriately limited to one of production, not persuasion, giving due regard to the presumption of validity.” *Apotex*, 254 F.3d at 1037.

Kline, which he could not locate before his deposition. Mr. Stevens cannot recall exactly how much time passed between the time that he made the trap to send to Dr. Kline and the time that another version of a trap was made for testing. After Dr. Kline's testing, Mr. Stevens did not work continually on the production of such a butane trap. At least a couple years went by before Mr. Stevens and his company began making major revisions to their previous ideas for traps and produced a commercial product. Stevens Dep. (RX-447) Tr. 69-72.

The record pertaining to the trap described in Mr. Stevens' letter to Dr. Kline demonstrates secrecy surrounding experimentation, a decision not to produce the trap for commercial use, and a period of years of intermittent development before another trap was designed and eventually shown or sold to the public. There is no clear connection between the experimental trap sent to Dr. Kline for testing and the commercial product marketed later. Even if the device made by Mr. Stevens in 1996 had all the elements of claim 1 of the '243 patent, and Mr. Stevens conceived of it before the invention of the '243 patent, it nonetheless could not invalidate any claim of the '243 patent due to its abandonment, suppression and concealment.³²

C. Obviousness

The respondents argue that claim 1 and claim 32 of the '243 are invalid due to obviousness.³³

³² The respondents argue that even if Mr. Stevens' work in 1996 did not anticipate claim 1 of the '243 patent, as a contemporaneous or nearly contemporaneous invention, it would show the level of ordinary skill in the art. *See* Respondents' Post-Hearing Brief at 36. As discussed, *supra*, it is not clear that the device made or described by Mr. Stevens contained every element or limitation of claim 1. Thus, it could not be established that there was contemporaneous or nearly contemporaneous invention.

³³ Had either asserted claim of the '243 patent been found invalid due to anticipation, it
(continued...)

Pursuant to 35 U.S.C. § 103, a patent may be found invalid if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a).

The Federal Circuit has summarized the law relating to obviousness, as follows:

Obviousness is a legal conclusion based on underlying facts of four general types, all of which must be considered by the trier of fact: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) any objective indicia of nonobviousness. See *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966); *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1270, 20 USPQ2d 1746, 1750-51 (Fed.Cir.1991); *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1566-68, 1 USPQ2d 1593, 1594 (Fed.Cir.1987).

“Determination of obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention.” *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 546, 48 USPQ2d 1321, 1329 (Fed.Cir.1998). There must be a teaching or suggestion within the prior art, within the nature of the problem to be solved, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources, to select particular elements, and to combine them as combined by the inventor. See *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 665, 57 USPQ2d 1161, 1167 (Fed.Cir.2000); *ATD Corp.*, 159 F.3d at 546, 48 USPQ2d at 1329; *Heidelberger Druckmaschinen AG v. Hantscho Commercial Prods., Inc.*, 21 F.3d 1068, 1072, 30 USPQ2d 1377, 1379 (Fed.Cir.1994)(“When the patented invention is made by combining known components to achieve a new system, the prior art must provide a suggestion or motivation to make such a combination.”).

³³ (...continued)
would also have been obvious. It has long been recognized that “[p]rior art that anticipates a claim renders the same claim obvious.” See *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716 (Fed. Cir. 1984).

Crown Operations Int'l, Ltd. v. Solutia Inc., 289 F.3d 1367, 1375-76 (Fed. Cir. 2002).

1. Claim 1

In this investigation, the respondents argue that “[t]he combination of the DeYoreo ‘776 patent or the Flowtron GAL-35 (RPX-15) with the Flowtron Skeeter-eater™ (RPX-16) renders Claim 1 obvious under 35 U.S.C. § 103.” Respondents’ Post-Hearing Brief at 37. The complainant opposes these arguments.

As discussed in Section III (claim construction) of this opinion, the DeYoreo ‘776 patent discloses an apparatus that produces CO₂ gas through the combustion of propane, and while not an insect trap, was intended for use with a trap. The Skeeter-Eater was a device that produced CO₂ gas for the purpose of attracting insects. Both the ‘776 patent and the Skeeter-Eater were connected to the Armatron company. The Galaxie-35, or GAL-35, was a trap, also manufactured by the Armatron company. It had no combustion chamber, and did not produce CO₂ gas to attract insects. The Galaxie-35 was intended as an embodiment of U.S. Patent No. 5,301,458, and it used ultra-violet light (as a supposed insect attractant), a fan to “vacuum” insects into the trap or to kill them, and an electric grid system to kill insects. *See* RX-80 (Galaxie Owner’s Manual); DeYoreo Dep. (RX-446) Tr. 115-119; Humphrey Tr. 354, 544-546; Neitzel 253, 354, 672.

The respondents argue that it would have been obvious to make combinations of these devices so as to render claim 1 of the ‘243 patent invalid. *See, e.g.*, Respondents’ Post-Hearing Brief at 37-40.

It cannot be denied that the combination of CO₂ gas and an insect trapping device was known in the art before the ‘243 patent. The specification of the ‘243 patent states that it was

known that CO₂ could be used to lure insects, along with the use of fans to generate suction flow. See '243 Patent (CX-1), col. 1, lines 17-29. In fact, the Skeeter-Eater instructed users to place the CO₂-producing device in the vicinity of a trap. However, none of the prior art relied upon by the respondents discloses an exhaust system that is both "coupled to the CO₂ gas source" and which releases the attractant "near the trap inlet," as required by claim 1. One of the reasons for rejecting the complainant's infringement arguments based on a one-foot range for the claim term "near," was that the complainant relied on the Skeeter-Eater, a device that was separate from a trap and whose instructions told users "to get the Skeeter-Eater as close to your bug killer as possible; within one foot."

Technologies such as the Skeeter-Eater or the DeYoreo '776 patent, even in combination with traps such as the Galaxie-35, are not the same as the invention disclosed in the '243 patent. Claim 1 of the '243 patent covers the generation and release of CO₂ gas in the same apparatus, indeed the release of attractant gas "near" the trap inlet, e.g., about three inches from the inlet even in a counterflow situation as in the embodiment depicted in the specification. The respondents have offered no evidence that the release of CO₂ gas "near" a trap inlet, in the sense of claim 1, was disclosed in the prior art or is otherwise "obvious" to one of ordinary skill.

Further, not only did the prior art fail to disclose the release of CO₂ gas "near" a trap inlet, there is a lack of evidence that the prior art disclosed the release of gas in the required temperature range, especially when one considers the fact that the point of release must be "near" the trap inlet, e.g., about three inches away from it. When Blue Rhino had tests performed on a Skeeter-Eater device, one of the tests indicated a temperature of 114.8° F, with the cover removed from the device. See RX-7C at 5. However, another test showed that the temperature

was at 136° F, outside the range required by claim 1. See RX-420 at 2-3; Gorman Tr. 372; Neitzel Tr. 652-653.

In addition, the DeYoreo '776 patent teaches that a catalyst is used to combust propane, and the catalyst is "elevated to an operative temperature of 700° F." See '776 Patent (RX-4), col. 2, lines 65-68. The respondents point out that the temperature of 700° F is only the temperature of the catalyst, and one of ordinary skill would understand that the temperature of the gas released from the device would be lower. It is also argued with respect to the Skeeter-Eater that the manual for the device states that the carbon dioxide is heated to lure a mosquito as "if a person were standing there." Yet, neither an understanding that the gas released from a DeYoreo device would be below 700 ° F, nor the general intention stated in the Skeeter-Eater manual, demonstrates that it would have been obvious to one of ordinary skill that the gas should be released within the ambient to 115° F temperature range required by claim 1 of the '243 patent. Nor has it been demonstrated that the exhaust system required by claim 1, such as described in the '243 patent, would have been obvious to one of ordinary skill, especially when one takes into consideration the fact that the temperature in question pertains to the attractant gas at the point of its release, not in the general vicinity of the claimed apparatus or a foot away.³⁴

Consequently, there is not clear and convincing evidence that claim 1 of the '243 patent is

³⁴ The fact that the temperature range required by claim 1 pertains to the temperature of attractant gas when released strengthens the need for the claim term "near" to be construed as close in proximity, e.g., about three inches. If the exhaust and trap inlet were not physically close to each other, it might be meaningless to define the temperature range of the attractant gas upon its release from the apparatus. The '243 patent is not based on what the temperature of the attractant gas is a foot or yard from the exhaust, nor does the '243 patent specification attempt to discern what that temperature might be.

invalid due to obviousness.³⁵

2. Claim 32

The respondents argue that there are many commercial stand-alone devices from Weed Eaters to hedge trimmers, and that U.S. Letters Patent No. 5,669,176 to Miller (RX-112) provides the motivation to extend stand-alone technology to insect traps. *See* Respondents' Post-Hearing Brief at 40-41; Respondents' Reply Brief at 23-24. The '176 Miller patent was cited by the Examiner during prosecution of the '243 patent. *See* '243 Patent Prosecution History (CX-3) at 011775.

The Miller '176 patent states that it discloses an insect trap that uses a fuel cell to provide carbon dioxide, water vapor and heat. Indeed, the '176 patent relies on a chemical reaction involving a methanol fuel cell. *See* Humphrey Tr. 578-579; '176 Patent (RX-112), col. 2, lines 48-59. Electricity generated by the fuel cell powers the electrical components of the trap, making it "self-sufficient from any external power source." *See* RX-112, Abstract; col. 1, lines 53-54. However, the type of electrical generation claimed by the '243 patent, and claim 32 in particular, is based on combustion, a concept that is absent from the '176 patent disclosure. *See* Neitzel;

³⁵ In addition to the evidence discussed, *supra*, there is objective evidence of patent validity, especially commercial success. In order to rely upon commercial success as a secondary consideration of nonobviousness, there must be a nexus between the success and the claimed features. *See, e.g., Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1130 (Fed. Cir. 2000) ("A nexus between commercial success and the claimed features is required."). The respondents argue that there can be no required nexus because it has not been shown that many of the products relied upon by the complainant practice the '243 patent, especially products other than the Mosquito Magnet Pro. *See* Respondents' Post-Hearing Brief at 42-43. However, there is sufficient evidence that the Mosquito Magnet Pro practices the '243 patent. Even if one considers only sales of the Pro product, there is a history of commercial success. *See* Neitzel Tr. 261-267, 347-348; Cardé Tr. 128; Humphrey Tr. 599; CX-154C. Additional findings concerning objective evidence, or secondary considerations, are contained in the Findings portion of this Initial Determination, Section V, Part C.

RX-112. Nevertheless, the respondents argue, thermoelectric generators were known in the art by the time of the '243 patent invention. That point is not contested by any party. Yet, the motivation to combine must be clear and particular, and supported by actual evidence in order to find obviousness. *See Teleflex, Inc. V. Ficosa N. America Corp.*, 299 F.3d 1313, 1334 (Fed. Cir. 2002). The evidence relied upon by the respondents fails to demonstrate such a motivation, and it is not clear how or why one of ordinary skill would rely on the '176 patent to develop a trap with combustion and an electrical generating capacity such as a thermoelectric module. The respondents' arguments apply hindsight to disparate examples of prior art and areas of knowledge.

The evidence fails to show clearly and convincingly that to one of ordinary skill a combustion-based trapping apparatus that supplied electricity to the extent required by claim 32 would have been obvious.

VI. ENFORCEABILITY

The respondents argue that the '243 patent cannot be enforced because the applicants intentionally withheld the '776 DeYoreo patent and the Skeeter-Eater from the PTO during patent prosecution.

A patent is unenforceable on grounds of "inequitable conduct" if the patentee made an affirmative misrepresentation of a material fact, failed to disclose material information, or submitted false material information, and if such an act or omission was coupled with an intent to deceive. *GFI, Inc. v. Franklin Corp.*, 265 F.3d 1268, 1273 (Fed. Cir. 2001); *Purdue Pharma L.P. v. Boehringer Ingelheim GmbH*, 237 F.3d 1359, 1366 (Fed. Cir. 2001). *Elk Corp. of Dallas v. GAF Bldg. Materials Corp.*, 168 F.3d 28, 30 (Fed. Cir. 1999).

Information is material if “there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent.” See, e.g., *GFI, Inc. v. Franklin Corp.*, 265 F.3d 1268, 1274 (Fed. Cir. 2001); *Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1179 (Fed. Cir. 1995). Intent to mislead does not require direct evidence. It is typically inferred from the facts. *Bristol-Myers Squibb Co. v. Rhone-Poulenc Rorer, Inc.*, 326 F.3d 1226, 1239 (Fed. Cir. 2003); *GFI*, 265 F.3d at 1274; *Merck & Co. v. Danbury Pharmacal, Inc.*, 873 F.2d 1418, 1422 (Fed. Cir. 1989). Furthermore, “where withheld information is material and the patentee knew or should have known of that materiality, he or she can expect to have great difficulty in establishing subjective good faith sufficient to overcome an inference of intent to mislead.” *Bristol-Myers Squibb*, 326 F.3d at 1239 (citing *Akron Polymer Container Corp. v. Exxel Container, Inc.*, 148 F.3d 1380, 1384 (Fed. Cir. 1998)); see also *GFI*, 265 F.3d at 1275. A mere denial of intent to mislead will not suffice. *GFI*, 265 F.3d at 1275.

Assuming that the ‘776 DeYoreo patent and the Skeeter-Eater were material to the ‘243 patent prosecution, there would nonetheless be significant questions concerning the requisite intent on the part of the applicants. Mr. Miller and Mr. Wigton did not merely deny an intent to deceive. Rather, Mr. Wigton testified at the hearing that he informed his patent attorney about the ‘776 patent. Mr. Miller, who testified only during a deposition, stated that “everything that we had on file that we thought was in any way germane we gave to our patent attorneys.” See Wigton Tr. 626; Miller Dep. (CX-220) Tr. 277. No evidence was presented concerning the intentions of the patent attorney, or how he handled prior art received from the inventors. With regard to the Skeeter-Eater, that product had not been commercially available for a matter of years before the ‘243 patent application was filed. See DeYoreo Dep. (RX-227C) Tr. 234-236.

Although Mr. Miller testified that he had observed a Skeeter-Eater, he also testified that he thought the product was extremely hot, and also apparently ineffective from a commercial standpoint. *See* Miller Dep. (CX-220C) Tr. 141-142, 268.

It cannot be found by clear and convincing evidence that the '243 patent is unenforceable due to inequitable conduct.

VII. DOMESTIC INDUSTRY

As stated in the notice of investigation, a determination must be made as to whether an industry in the United States exists as required by subsection (a)(2) of section 337.

It is uncontroverted that in this case, ABC must satisfy economic and a technical requirements with respect to its products. It is further without controversy that ABC's domestic investments and/or activities satisfy the economic "prong" or requirement. *See, e.g.,* Tr. 53. There is, however, a question as to whether the technical prong has been satisfied, i.e., whether or not ABC's products practice a claim of the '243 patent.

The respondents argue that ABC has presented no evidence that any of its products satisfies the "near" limitation of independent claim 1 of the '243 patent under ABC's proposed claim construction. Indeed, no other claim limitation has been put into controversy. *See* Complainant's Post-Hearing Brief at 45-48; Respondents' Post-Hearing Brief at 44; OUII Post-Hearing Brief at 43-44; *see also* Tr. 200-201 (stipulation).

With respect to the respondents' argument, it is noted that the Administrative Law Judge has not adopted ABC's proposed claim construction (or ABC's proposed construction as understood by the respondents). Furthermore, the evidence shows that the intake and outlet system of many ABC insect traps (i.e., the Mosquito Magnet Pro traps) consists of an outflow

tube that is concentrically surrounded by an inflow tube, in an arrangement similar to that depicted in Figure 1 of the '243 patent. *See* OUII Post-Hearing Brief at 44 (citing Neitzel Tr. 261-266, 348). The CO₂ is clearly released near the trap inlet in these ABC traps, especially given the construction of the term "near" as set forth in this initial determination. The CO₂ exhaust is so near the intake that it is immediately surrounded by the intake, with the end of the exhaust tube extending about three inches beyond the end of the suction tube. *See* Cardé Tr. 128. Thus, the "near" limitation, as properly construed, is met by many, if not all, of ABC's insect traps.

In addition, it is more likely than not that due to the placement and function of the exhaust and intake tubes in ABC's Mosquito Magnet Pro devices, the "near" limitation would be met, even if counterflow were required by independent claim 1 of the '243 patent. *See* OUII Post-Hearing Brief at 43-44; '243 Patent (CX-1), col. 5, lines 12-16; Cardé Tr. 128; Neitzel Tr. 261-266, 347-348.

Consequently, it has been established that an industry in the United States exists, pursuant to subsection (a)(2) of section 337.

FINDINGS OF FACT

I. BACKGROUND

1. The products at issue in this investigation are devices that are designed to attract and capture flying insects that bite humans, especially mosquitoes. It is uncontroverted that carbon dioxide (CO₂), which is believed to be a mosquito attractant, is emitted by complainant ABC's "Mosquito Magnet[®]" products, the accused Blue Rhino "SkeeterVac" products, and devices covered by the asserted claims of the '243 patent. *See* Complainant's Post-Hearing Brief at 6-7; Respondents' Post-Hearing Brief at 1-3; OUII Post-Hearing Brief at 4.
2. Blue Rhino insect traps that were introduced into the market before this year are no longer at issue due to a consent order. However, the complainant asserts that the new SkeeterVac products infringe claims 1 and 32 of the '243 patent, specifically the SV27, SV35 and SV2000 models or any of the respondents' devices that may be similar to those models, regardless of their brand or model designations. The parties refer to the accused products as the "2004 SkeeterVac" models or devices. There are no known differences among the various 2004 SkeeterVac products that are material for the purposes of this investigation. *See, e.g., Id.*

II. IMPORTATION AND SALE

1. The respondents have admitted the importation and sale of accused products. No party has contested the Commission's *in rem* and personal jurisdiction. *See, e.g.,* Complainant's Post-Hearing Brief at 7 (citing Respondents' Prehearing Statement, Tab 3,

Complainant's Prehearing Statement at 15); SPFF 23 (Blue Rhino Prehearing Statement, List of Proposed Stipulations).

2. The 2004 SkeeterVac models are manufactured in China by Guangdong Dong Fang. Blue Rhino's Amended Response to First Amended Complaint, ¶ 12, at 6; Blue Rhino's Response to Second Amended Complaint, ¶ 12, at 7; Blue Rhino's Response to First Amended Complaint, ¶ 12, at 6; CPX-2; CPX-3; CPX-4; Respondents' Prehearing Statement, Tab 3, ¶ 4.
3. Blue Rhino imports the 2004 SkeeterVac Models into the United States. Blue Rhino's Response to Second Amended Complaint, ¶ 12, at 7; Respondents' Prehearing Statement, Tab 3, ¶ 4.
4. Blue Rhino offers for sale and sells the 2004 SkeeterVac Models in the United States after importation. Blue Rhino's Response to Second Amended Complaint, ¶ 12, at 7; Respondents' Prehearing Statement, Tab 3, ¶ 4; CX-196.

III. CLAIM CONSTRUCTION

1. The asserted patent in this investigation is U.S. Patent No. 6,145,243, which issued on November 14, 2000, to Bruce E. Wigton and Mark H. Miller. The patent was assigned to ABC, the complainant in this investigation. *See* CX-1 ('243 Patent).
2. The '243 patent is based on Application No. 09/009,950 (January 21, 1998), a continuation-in-part of Application No. 08/718,634 (September 17, 1996). *See Id.*
3. In 2001, Armatron International, Inc., of Melrose, Massachusetts requested reexamination of certain claims of the '243 patent in view of U.S. Patent No. 4,519,776 to DeYoreo, and the Patent and Trademark Office granted reexamination with respect to claims 1-39.

CX-5. The '243 Reexamination Certificate issued on July 8, 2003. All asserted claims of the '243 patent remain in effect. *See* CX-137.

4. The asserted claims of the '243 patent, claims 1 and 32, are as follows:

1. An insect trapping apparatus, comprising:

an insect trap, including a trap inlet for the entry of insects;

a CO₂ gas source capable of providing CO₂ gas having a temperature above ambient temperature wherein the CO₂ gas source includes a combustion chamber having an outlet; and

an attractant exhaust system coupled to the CO₂ gas source, the attractant exhaust system being structured and arranged to cool heated CO₂ gas and to release an insect attractant comprised of the cooled CO₂ gas near the trap inlet at a temperature above ambient temperature and below approximately 115° F.

* * *

32. The insect trapping apparatus of claim 1, further comprising the trapping apparatus requires electric power to operate, wherein the combustion chamber is part of a hydrocarbon fueled generating system providing all the electric power requirements of the trapping apparatus.

'243 Patent (CX-1), col. 9, lines 28-41 and col. 11, line 65 through col 12, line 2.

5. A person of ordinary skill in the art would have an undergraduate degree in mechanical engineering or chemical engineering. Such a person would have approximately 3 years of experience working with insect traps, and additional instruction or knowledge in the areas of combustion and entomology. *See* Neitzel Tr. 213; Humphrey Tr. 468.
6. The complainant's expert testified that a person of ordinary skill would have "some sort

of education or knowledge acquired in the field of entomology. * * * [It] could be acquired through self-study or on-the-job experience.” Neitzel Tr. 213.

7. The respondents’ expert testified that a person of ordinary skill “would learn a little bit about the biology of insects and the nature of the behavior of the insects, why they get trapped, what are good lures, things like that. It wouldn’t necessarily be experts, but would have what I would call a lot of common knowledge, or some common knowledge.” Humphrey Tr. 468.
8. The plain language of claim 1 (first element) specifies that the trap inlet exists for the entry of insects into the insect trap apparatus. The plain language does not require the entry of anything else via the trap inlet. See ‘243 Patent (CX-1), col. 9, lines 28-41 (“an insect trap, including a trap inlet for the entry of insects”).
9. Claim 12 of the ‘243 patent is, as follows:

12. The insect trapping apparatus of claim 11, wherein the trap further includes a suction fan arranged to draw an airflow in through the trap inlet and out through the mesh bag, the airflow being drawn into the trap inlet being directed counter to and substantially surrounding the exhaust flow of the cooled CO₂ gas being released through the exhaust pipe outlet.
- ‘243 Patent (CX-1), col. 10, lines 14-21.
10. The use of a suction fan is also required by other claims. See ‘243 Patent (CX-1), col. 10, lines 7-13 (claims 10 and 11).
11. The ‘243 patent Abstract states: “A counterflow of outside air is drawn into the trap through the suction tube that concentrically surrounds the exhaust tube.” See ‘243 Patent (CX-1), Abstract.

12. The Background of the Invention portion of the specification states in part:

The invention relates to methods and apparatus for attracting and trapping or otherwise disabling insects, and, in particular, to a counterflow device that produces CO₂ gas and then cools the CO₂ gas for use as an insect attractant in an outflow from the trap.

'243 Patent (CX-1). col. 1, lines 12-16.

13. The Background portion of the specification continues in its next paragraph by describing the use of "suction traps," "screened material" for trapping insects;" "fan mechanisms;" and lures such as lights, the chemical octenol, and CO₂ gas (from sources other than combustion). '243 Patent (CX-1), col. 1, lines 17-28.

14. The "Summary of the Invention" begins with the following paragraph:

The invention provides a stand-alone, portable, self-powered insect trap that is capable of operating continuously for about one month on a single twenty-pound tank of propane fuel. The device generates its own insect attractants of carbon dioxide (CO₂), heat and water vapor through catalytic conversion of a hydrocarbon fuel in a combustion chamber. The trap device includes a counterflow insect trapping device of the type disclosed in co-owned patent application Ser. No. 08/718,643, the entire disclosure of which is included herein by reference. The hot insect attractants generated in the combustion chamber are diluted and cooled to a temperature above ambient temperature and below about 115° F. by mixing with air, and then the mixture is exhausted downward through an exhaust tube. A counterflow of outside air is drawn into the trap through a suction tube that concentrically surrounds the exhaust tube. Biting insects are captured in a porous, disposable bag connected to the other end of the suction tube. Thermoelectric modules coupled to the combustion chamber generate power for fans that provide the exhaust flow and the suction flow. Additional chemical attractants may be used with the device to make the trap even more effective. The trap may be adapted for trapping different types of insects by adjusting airflow velocities and attractants.

'243 Patent (CX-1), col. 1, lines 37-60.

15. A portion of the '243 patent specification states that "[t]he trap device *includes a counterflow insect trapping device of the type disclosed in co-owned patent application Ser. No. 08/718,643, the entire disclosure of which is incorporated herein by reference.*" '243 Patent (CX-1), col. 1, lines 43-46 (emphasis added).

16. The specification of U.S. Patent No. 6,286,249 states in part:

Flying insects 64 are drawn toward [to] the device 10 by following a plume of air containing the attractant. The plume is created by the downward directed exhaust flow 50 from fan 42. *It has been observed that some insects tend to follow the upper edge of a flow of air containing an attractant. Accordingly the device 10 is structured such that the inflow 48 is directed to flow near an upper edge of the outflow 50 outside the device. As the insects 64 follow the upper edge of the exhaust plume, they are led naturally to the suction flow 48 being drawn into device 10,* and are thereby urged by suction flow 48 to enter channel 30 through substantially annular-shaped opening 32. Once entrained in a suction stream, the insect's natural tendency is to fly upward to avoid danger, which carries the insect 64 further into the device 10. The insects 64 eventually find their way through opening 24 and opening 66 of frusto-conical structure 41 into mesh bag 36 where they are trapped.

'249 Patent (CX-2), col. 5, lines 6-22 (emphasis added).

17. The '243 patent specification states in part:

CO₂ gas can be provided by a source other than burner 56, and heated and/or diluted by other means than those disclosed in the specific embodiment described above. Any insect trap that releases a mixture of CO₂ gas and air with a CO₂ concentration in a range between about 500 ppm and about 2500 ppm and/or at a temperature above ambient temperature and below about 115° F. is contemplated to be within the scope of the invention.

Other embodiments are within the scope of the following claims.

'243 Patent (CX-1), col. 9, lines 17-24.

18. The sixth paragraph of the '243 patent Summary describes "another aspect" of the

invention which provides "a trap having a trap inlet through which insects can enter into the trap, providing a mixture that includes CO₂ gas and air, and releasing the mixture near the trap inlet at a temperature above ambient temperature and below about 115° F." See '243 Patent, col. 2, lines 38-52.

19. The next paragraph of the '243 patent specification provides:

The method *can further include* the step of employing a suction fan to draw an inflow of air in an upward direction into the trap inlet, wherein releasing the mixture includes directing an exhaust flow of the mixture in a direction downward and counter to the inflow from an exhaust pipe outlet positioned directly below the trap inlet.

See '243 Patent (CX-1), col. 2, lines 53-58 (emphasis added).

20. In its discussion of the detailed embodiment, the '243 patent specification contains one specific reference to the distance between the exhaust and the trap inlet, as follows:

An exhaust tube 44 provides a flow of an insect attractant, such as CO₂, in a direction counter to the direction of flow of air being drawn in through suction tube 30. The exhaust flow is directed downward to the ground, while the air being drawn into trap 28 through suction tube 30 is directed upwards. Exhaust tube 44 enters enclosure 16 through wall 42, then enters suction tube 30 through a side opening 46. Exhaust tube 44 then extends about concentrically within and through suction tube 30. *An open end 48 of exhaust tube 44 extends down past open end 32 of suction tube 30 by about three inches.* Thus, an exhaust flow is surrounded by an inflow, as indicated by arrows 50, 52, respectively.

'243 Patent (CX-1), col. 5, lines 4-16 (emphasis added).

21. The '243 patent specification subsequently provides additional information about the location of the trap inlet (which in this case is the opening of a suction tube), as follows:

The elevation of inlet opening 32 of suction tube 30 can be adjusted to optimize the device's effectiveness in capturing different types of insects. For example, for capturing common North American

mosquitos and sand flies, the elevation of inlet opening 32 is optimized at about 18 inches from the ground. For malarial anopheles mosquitos in Africa inlet opening 32 port can be optimized at only about 6 inches above the ground. Extension tubes can be used to adjust the elevation of inlet opening 32.

'243 Patent (CX-1), col. 8, line 64 through col. 9, line 5.

22. During prosecution of the '243 patent, the applicants (through counsel) attempted unsuccessfully to amend the pending claims. In the applicants' Remarks, they stated that the "trap device includes a counterflow insect trapping device of the type disclosed in co-owned patent application Serial No. 98/718,643, the entire disclosure of which is included by reference." In the same paragraph, the applicants stated that a "counterflow of outside air is drawn into the trap through a suction tube that concentrically surrounds the exhaust tube." '243 Patent Prosecution History (CX-3) at ABC011739. The same statements were made in response to a subsequent PTO Office Action. *See Id.* at ABC011774. These statements are also made in the Summary portion of the current specification. *See* '243 Patent (CX-1).
23. At one point during reexamination of the '243 patent, the Examiner rejected claim 1 of the '243 patent, *inter alia*, U.S. Patent No. 4,519,776 to DeYoreo because it was thought that the '776 DeYoreo patent taught the release of a CO₂ and air mixture "near the trap inlet." There was no mention of counterflow in the Examiner's Rejection. '243 Patent Reexamination (CX-5) at ABC011328-11329.
24. The '776 DeYoreo patent is not a patent on an insect trap. Entitled, "Apparatus for Attracting Insects," the '776 patent discloses a carbon dioxide generator, and teaches that the apparatus described therein can be used with an insect trap. The patent is assigned to

Armatron International, Inc. *See* '776 Patent (RX-4), col. 1, lines 22-28, 56-64; Neitzel Tr. 251-252.

25. The '776 patent claims an apparatus that produces carbon dioxide by the catalytic combustion of propane. The '776 patent does not disclose the generation of electrical power. *See* RX-4 ('776 Patent), col. 2, line 41 through col. 3, line 5, col. 8, lines 1-2; Neitzel Tr. 253, 672; Humphrey Tr. 574.
26. It is argued that the Skeeter-Eater is an embodiment of the '776 DeYoreo patent. Both are connected to the Armatron company. *See* RPFF8.3.1.3 (citing DeYoreo Dep. (RX-446) Tr. 90).
27. During the reexamination of the '243 patent, the patentees specifically discussed the meaning of the terms contained in the third element of claim 1, which contains the word "near." The patentees stated:

To facilitate an understanding of this claim language and how the recited temperature range characterizes the "insect attractant" as it is being released, the Applicants' representative agreed during the interview to provide a "breakdown" of the grammatical construction of this language. According to this quoted claim language, the "attractant exhaust system" must be "coupled to the CO₂ gas source." Further, the "attractant exhaust system" must be "structured and arranged" to perform two specific functions: (1) "to cool heated CO₂ gas;" and (2) "to release an insect attractant comprised of the cooled CO₂ gas." The remaining language limits the release of the "insect attractant" to where it is released and at what temperature it is released. The language "near the trap inlet" defines where the "attractant exhaust system" releases the "insect attractant." The language "at a temperature above ambient temperature and below approximately 115° F" defines the temperature at which the "attractant exhaust system" releases the "insect attractant." With this understanding of how the temperature range language characterizes the releasing function of the "attractant exhaust system," it is clear that the only reasonable interpretation for claim 1 is that it is limited to an apparatus wherein the "insect attractant" is within the claimed

range at the point of release from the "attractant exhaust system."

'243 Patent Reexamination (CX-5) at ABC011340 (underlining in original).

28. The product literature for the Flowtron Skeeter-Eater device instructs the user to mount the device "as close to your bug killer as possible; within one foot." CX-124 at AR 04625.
29. The Skeeter-Eater was a mosquito luring device that generated carbon dioxide through the conversion of propane, and was to be used in conjunction with a trap. CX-124; Neitzel Tr. 240, 251.
30. The Background portion of the '243 patent specification discusses the use of attractants "in the vicinity of the trap." See '243 Patent (CX-1), col. 1, lines 17-28.
31. The '243 patent specification directly addresses the question of igniting hydrocarbon fuel in the combustion chamber, as follows:

A high voltage piezo-electric spark igniter 86, of a type often included with gas grills and gas fireplaces, has a manual push-button 88 mounted through a front panel 90 of burner enclosure 18. A high voltage insulated conductor 92 connects the piezo generator to a ceramic-insulated electrode 94 mounted through the combustion chamber cover plate 70. Pressing push-button 88 provides a single spark intended to ignite the propane-air fuel mixture within combustion chamber 68.

* * *

A flame is initiated above bead bed 84 with spark igniter 86. As the flame burns, heat generated from the combustion warms combustion chamber 68 and bead bed 84. After the flame has been going for some 30 seconds to 45 seconds, the heat is reflected down into catalyst bead bed 84. The catalyst is warmed up and as the catalyst is warmed up it achieves a surface combustion temperature and the flame converts to a catalytic surface combustion in bead bed 84. As a greater amount of the fuel-air mixture oxidizes in bead bed 84, the flame becomes starved of fuel and is extinguished. The combustion

continues entirely on a catalytic basis.

'243 Patent, col. 62 through col. 6, line 3; col. 7, lines 3-13.

32. The system detailed in the '243 patent specification includes a thermoelectric module that uses heat from the combustion chamber to generate electricity. *See, e.g.,* '243 Patent (CX-1), col. 6, lines 4-30; col. 7, lines 46-65.
33. During prosecution of the '243 patent, original claim 34 was amended. In their Remarks, the applicants stated: "Claim 34 has been amended to depend on claim 1 and to more clearly point out that the combustion chamber is part of the hydrocarbon fueled generating system." '243 Patent Prosecution History (CX-3) at ABC011773.

IV. INFRINGEMENT DETERMINATION

1. With respect to claim 1 of the '243 patent, the parties stipulated that the only contested limitation pertains to "the attractant exhaust system being structured and arranged to cool heated CO₂ gas and to release an insect attractant comprised of the cooled CO₂ gas near the trap inlet." A similar stipulation was reached with respect to the products relied upon by the complainant to satisfy the domestic industry requirement of section 337. Tr. 200-201.
2. It is uncontroverted that CO₂ gas is released from the bottom (or WaveDrawer) of the 2004 SkeeterVac trap body, and that the trap inlet is located toward the top of the trap body (beneath the lid of the device) at a distance of 9 to 11 inches from the point of CO₂ gas release, depending upon the precise points of measurement. *Compare* Complainant's Post-Hearing Brief at 18-19 *with* Respondents' Post-Hearing Brief at 18.
3. The accused 2004 SkeeterVac product has light-emitting diodes, contrasting patterns of

black and white, octenol released from the top of the trap, and a “heat signature” and “sticky paper” around the trap body. The respondents believe that these features facilitate the attraction or capture of mosquitoes. *See* Apperson Tr. 442-446.

4. The evidence concerning meandering does not establish that a meandering insect would meander into a trap inlet not arranged in a counterflow configuration, or be caught in counterflow, some 9 to 11 inches away from the point of CO₂ gas release. *See* Cardé Tr. 131-132, 173, 183-194; Neitzel Tr. 326.
5. It is undisputed that the 2004 SkeeterVac models use an igniter battery. *See, e.g.*, Complainant’s Post-Hearing Brief at 21; Respondents’ Reply Brief at 17.
6. In the accused devices, once combustion begins, a thermoelectric module supplies the electricity needed to run the apparatus, including lights and fans. *See* Neitzel Tr. 224-228, 257-259, 270-271.
7. Claim 32 depends from claim 1 and recites that the “trapping apparatus requires electric power to operate, wherein the combustion chamber is part of a hydrocarbon fueled generating system providing all the electric power requirements of the trapping apparatus.” ‘243 Patent (CX-1), col. 11, line 65 through col. 12, line 2.
8. The 2004 SkeeterVac models include a combustion chamber. CPX-2; CPX-3; CPX-4; Neitzel Tr. 224-225.
9. The 2004 SkeeterVac models have a TEM. CPX-2; CPX-3; CPX-4; Neitzel Tr. 224-225.
10. The TEM in the 2004 SkeeterVac models is connected to the combustion chamber. Neitzel Tr. 224, lines 17-25.
11. The 2004 SkeeterVac models catalyze propane in the combustion chamber. Neitzel Tr.

223-224.

12. Propane is a hydrocarbon. '243 Patent (CX- 1), col. 5, lines 25-27; CX-3 at ABC 011775-76.
13. The 2004 SkeeterVac models have a battery-powered igniter that creates a spark to begin the combustion of the propane in the combustion chamber. Neitzel Tr. 227-228; CPX-3.
14. After combustion begins, however, the TEM part of the generating system takes over to provide all of the electrical power requirements of the trap. Neitzel Tr. 227- 228, 258-259.
15. The heat generated by this combustion creates a temperature difference so that a thermoelectric module provides all of the power necessary to drive the fan and operate the lights on these models. Neitzel Tr. 224, 257-259.
16. The TEM provides the electricity to run the lights and the fans of the traps. The battery does not provide the power to run these items. Humphrey Tr. 570-571.
17. Although Dr. Humphrey denies infringement because the 2004 SkeeterVac models use a battery for ignition, he concedes that his opinion would change "if the battery were recharged by the hydrocarbon fuel generating system ... because now we would have an integrated system." Humphrey Tr. 522-523.
18. Dr. Humphrey admits, however, that claim 32 does not require an integrated system. Humphrey Tr. 522-523 ("The way I read this patent the system is not truly integrated.").
19. The 2004 SkeeterVac models all require electric power to operate as required by claim 32 of the '243 patent. Neitzel Tr. 258-259.
20. The 2004 SkeeterVac models have a combustion chamber that is part of a hydrocarbon

fueled generating system providing all the electric power requirements of the trapping apparatus as recited in claim 32 of the '243 patent. Neitzel Tr. 259-260.

21. V. VALIDITY

A. Indefiniteness

1. There is a large variance in mosquito behavior, especially across the various mosquito species. *See* Cardé Tr. 191-195 (in which the witness, in response to Staff questioning, discussed the concept of “near” or “near enough” in view of the large variance in mosquito behavior).
2. A common understanding of the term “near” indicates closeness in space or distance. *See The American Heritage Dictionary, Second College Edition* (CX-203) at 833 (near . . . “adj . . . 1. Close in time, space, position, or degree . . .”); *see also* Merriam-Webster OnLine, www.m-w.com (accessed July 27, 2004)(near . . . “preposition: close to”)(near . . . “adverb . . . 1: at, within, or to a short distance or time”).

B: Anticipation

1. Australian published Application Au-A-11632/95, “Insect Trap,” lists John Meili as the inventor. RX-5.
2. The Abstract of the Meili Australian (published) patent application refers to:

An apparatus for trapping and killing flying insects, especially midges. The apparatus preferably comprises an attractant such as a light source, carbon dioxide source, or warmed zone, a fan and a killing means such as a liquid trap. The attractant means draws the insects to a position proximate the fan whereby they are drawn into the killing means and killed.

Meili (RX-5) at SV009077.
3. In the Meili preferred embodiment, the burning of liquid petroleum gas (“LPG”) produces

a discharge of CO₂ gas and other “constituents being normally found in the expelled air of warm blooded animals.” *See* RX-5 at SV009081. According to the Meili specification, as the LPG is burned, a chamber (labeled 22) is filled with “warm carbon dioxide and/or bait attractant 23.” *See* RX-5 at SV009082. This chamber is also apparently the same as “the warmed zone heated to a temperature warmer than the surrounding atmosphere” *See* RX-5 at SV009079-9080.

4. Meili explains that a chamber in the apparatus is filled with warm carbon dioxide, although it does not explain how the gas is released. *See* Meili (RX-5).
5. In the embodiment detailed in the Meili specification, no mention is made of the temperature of the carbon dioxide as it reaches the outside of the trap, and no dimensions are given for the trapping apparatus. There is no information about the length or circumference of the pipe through which CO₂ rises. *See* Meili (RX-5).
6. Mr. David Stevens, an employee of Flowtron Outdoor Products, a division of Armatron International, Inc., of Melrose, Massachusetts, sent a letter with diagram, dated October 16, 1996, to U.S. Department of Agriculture official Dr. Daniel Kline. The letter allegedly reflects a device made by Mr. Stevens in this country. RX-75 is a copy of the Stevens letter and diagram.
7. The Stevens letter and hand drawn diagram of two pages, with the letter containing only the two following paragraphs:

Hello Dan!

Here's the new unit. As you can see, there are some small but significant changes.

First of all, there are two chambers in the CO₂ generator . . . an inner and an outer. The inner chamber surrounds the catalyst, and captures the hot gases. A small blower on the top directs these through a

copper tube and into the grid area on the right hand side. The outer chamber has a large blower on top that helps to cool the inner chamber and the copper tube, so the CO₂ exits at about 100° F. The cooling air exists at the back of the unit, away from the CO₂ stream.

To use the unit, first insert the butane so that the bottom of the can is between 3/8" and 1/2" of the bottom the unit. You may have to push firmly on the can to do this. There is enough friction so that the can will remain seated without any external support. When you plug the unit in, the light should come on, the valve begin clicking fairly rapidly (100 per min or so), and the blower should come on, exhausting at the back. If there is no light, check the bulb for proper insertion. If there is no clicking, remove and replace the butane can two or three times.

RX-75 at 1.

8. While the respondents' expert witness noted portions of the Stevens device that would allow CO₂ gas to cool somewhat before release from the trap, he relied upon a simple statement in Mr. Stevens' letter to determine the temperature of the gas. The respondents' expert testified, as follows:

At a temperature above ambient. Because of combustion. And below approximately 115 degrees Fahrenheit.

One might ask, how do we know that this is 115 degrees Fahrenheit. I think there's a reference to that in the text. The intent is heat is expressed here, that the CO₂ should exit at about 100 degrees Fahrenheit.

So it seems to me that the Stevens device practices all the limitations of this claim.

BY MR. CONNOR:

Q Dr. Humphrey, doesn't it also expressly indicate that the CO₂ gas should be cooled so as to reach this temperature of about 100 degrees Fahrenheit?

A It does say that.

Q In the text?

A Yes.

Q Okay. So is it your opinion that all of the elements of claim 1 are described in this Stevens letter?

A It is my opinion that they are.

Humphrey Tr. 539-540 (emphasis added).

9. The device described in Mr. Stevens' October 16, 1996 letter was "basically, just an experiment more than anything else," having to do with the reaction of insects to CO₂ gas as an attractant. Mr. Stevens made only one such trap and sent it only to Dr. Kline. Stevens Dep. (RX-447) Tr. 68-69.
10. Mr. Stevens did not show his trap to anyone other than persons at the company where he worked. He had confidence that Dr. Kline would consider the experimental trap to be proprietary, and would not disclose it to anyone else. Stevens Dep. (RX-447) Tr. 61-62, 68-69.
11. The device described in the letter dated October 16, 1996 was never used in public or placed on sale. The device did not work effectively, and it did not look like a device that was suitable for commercial marketing. Stevens Dep. (RX-447) Tr. 68-70.
12. After the device in question was tested by Dr. Kline, Mr. Stevens may have made some small changes to the design. Mr. Stevens cannot recall if Dr. Kline ever returned the trap that he tested. Mr. Stevens thought that he once had another trap that was similar to the device that he sent to Dr. Kline, which he could not locate before his deposition. Mr. Stevens cannot recall exactly how much time passed between the time that he made the trap to send to Dr. Kline and the time that another version of a trap was made for testing. After Dr. Kline's testing, Mr. Stevens did not work continually on the production of such a butane trap. At least a couple years went by before Mr. Stevens and his company began

making major revisions to their previous ideas for traps and produced a commercial product. Stevens Dep. (RX-447) Tr. 69-72.

C. Obviousness

1. The Galaxie-35, or GAL-35, was a trap, manufactured by the Armatron company. It had no combustion chamber, and did not produce CO₂ gas to attract insects. The Galaxie-35 was intended as an embodiment of U.S. Patent No. 5,301,458, and it used ultra-violet light (as a supposed insect attractant), a fan to “vacuum” insects into the trap or to kill them, and an electric grid system to kill insects. *See* RX-80 (Galaxie Owner’s Manual); DeYoreo Dep. (RX-446) Tr. 115-119; Humphrey Tr. 354, 544-546; Neitzel 253, 354, 672.
2. The specification of the ‘243 patent states that it was known that CO₂ could be used to lure insects, along with the use of fans to generate suction flow. *See* ‘243 Patent (CX-1), col. 1, lines 17-29.
3. When Blue Rhino had tests performed on a Skeeter-Eater device, one of the tests indicated a temperature of 114.8° F, with the cover removed from the device. *See* RX-7C at 5. However, another test showed that the temperature was at 136° F, outside the range required by claim 1. *See* RX-420 at 2-3; Gorman Tr. 372; Neitzel Tr. 652-653.
4. The DeYoreo ‘776 patent teaches that a catalyst is used to combust propane, and the catalyst is “elevated to an operative temperature of 700° F.” *See* ‘776 Patent (RX-4), col. 2, lines 65-68.
5. Propane combusts at a very high temperature. Neitzel Tr. 233; CX-12C at ABC 006608 (“482° F to light off propane on catalyst”).

6. Catalytic combustion of propane can occur at an operative temperature of about 700° F. Neitzel Tr. 329; RX 4; CX-5 at ABC 010928.
7. In order to produce CO₂ within the range at which it acts as an insect attractant, a trap must first cool the hot CO₂ prior to its release into the surrounding atmosphere. Neitzel Tr. 233, 265-266.
8. U.S. Letters Patent No. 5,669,176 to Mark H. Miller (RX-112) was cited by the Examiner during prosecution of the '243 patent. *See* '243 Patent Prosecution History (CX-3) at 011775.
9. The '176 patent was assigned to ABC. '176 Patent (RX-112).
10. The Miller '176 patent states that it discloses an insect trap that uses a fuel cell to provide carbon dioxide, water vapor and heat. The '176 patent relies on a chemical reaction involving a methanol fuel cell. *See* Humphrey Tr. 578-579; '176 Patent (RX-112), col. 2, lines 48-59.
11. Electricity generated by the fuel cell powers the electrical components of the '176 patent trap, making it "self-sufficient from any external power source." *See* RX-112, Abstract and col. 1, lines 53-54.
12. The type of electrical generation claimed by the '243 patent, and claim 32 in particular, is based on combustion, a concept that is absent from the '176 patent disclosure. *See* Neitzel; RX-112.
13. Thermoelectric generators were known by the time of the '243 patent invention. *See, e.g.,* Berg Tr. 412-413.
14. ABC's Mosquito Magnet Pro practices the '243 patent. *See* Neitzel Tr. 261-267,

- 347-348; Cardé Tr. 128; Humphrey Tr. 599.
15. Years after Armatron's discontinuance of the Skeeter-Eater, in 1998, ABC introduced the first Mosquito Magnet[®] insect traps. CX-154C; DeYoreo Dep. (RX-227C) Tr. 234-236.
 16. When ABC first started to sell its Mosquito Magnet Pro trap for over \$1000, there were no other propane-based traps on the market. Iannetta Tr. 70. Instead, widely used products at that time included bug-zappers, which cost between \$49 and \$99, and pesticides. Iannetta Tr. 70-71.
 17. ABC's Pro trap was met with skepticism because people did not believe that it would sell, mainly because it cost over \$1000 and because of all of the other "gadgets and gimmicks" on the market. Some even doubted the ability of a trap to effect a substantial reduction in the number of mosquitoes in an area. Iannetta Tr. 69-71.
 18. With reference to ABC traps, Mr. Stevens of Armatron testified that "marketing people were rather taken aback that the price, that they would sell at this kind of price – that they would sell at this kind of a price. That's what got everybody moving, including, incidentally, Blue Rhino and everybody else." Stevens Dep. (RX-447) Tr. 117-118 .
 19. During his deposition, Mr. Stevens was asked if he ever talked to Dan Kline (of the USDA) about ABC's traps. Mr. Stevens testified, "Yes. To the extent that they were the standard. They were the ones that were really the best on the market, at least in his opinion. We should try to get as close as we can in performance to that. That was our standard." He testified that such conversations took place at the time that the ABC traps were first introduced. Stevens Dep. (RX-447) Tr. 117.
 20. In a patent assigned to The Coleman Company, Inc. of Wichita, Kansas, which lists

James A. Nolen as the inventor, the specification expressed skepticism because ABC's Mosquito Magnet cost in excess of \$1000. U.S. Patent No. 6,594,946 B2 (CX-156), col. 2, lines 39-42 ("due to its high suggested retail price (\$700 to \$1300, depending upon the model), it is far out of reach of the ordinary customer. Thus, few people would actually purchase the MOSQUITO MAGNET, even if they have a pressing need for mosquito control."); Neitzel Tr. 680.

21. Since its inception, however, ABC has shown a growth of 25,615%, based primarily on its sales of the Mosquito Magnet, and has been deemed "the fastest growing private company in America" by INC. magazine. CX-127 at ABC 021912-913; Iannetta Tr. 76; CX-242.
22. Other companies like Microsoft and Google have been on the INC. 500 list; however, ABC was the first and only consumer-product company to hold the number 1 spot on that list. Iannetta Tr. 77; Respondents' Reply to CPFF at 2.
23. ABC has sold over 500,000 Mosquito Magnet units since 1998 and has experienced triple-digit growth in its unit sales every year from 1998 through 2002. Iannetta Tr. 73; CX-154C; CX-242.
24. The following chart shows the growth in ABC's annual sales prior to the institution of this investigation:

1998-2003 Unit Sales

	1998	1999	2000	2001	2002	2003 YTD 6/30/03	2003 Rest of Year (Forecast)	Total	Retail \$
PRO	75	582	3,815	15,013	27,915	13,390	3,135	64,835	\$1,395
Freedom	0	0	815	15,759	18,193	0	0	34,767	\$745
Liberty	0	0	0	0	60,422	62,052	15,871	138,345	\$493
Defender	0	0	0	0	0	84,781	57,491	142,272	\$393
Golden Edition	0	0	0	0	0	9,504	0	9,504	\$260
Total	75	582	4,680	31,672	106,530	169,717	76,497		
						Total Projected 2003			
						216,214			
						Total Units Sold		313,348	
						Projected Sales End of 2003		389,743	

TABLE 1

CX 154C.

25. Based upon its sales of Mosquito Magnet insect traps, ABC has earned between \$220 and \$250 million dollars in revenue as of the hearing date. Iannetta Tr. 73. Between 70% to 75% of these sales occur in a three month period. Iannetta Tr. 75.
26. About 70 percent of ABC's sales come from word of mouth. Iannetta Tr. 90; CX-242 ("70 percent of buyers were influenced by direct exposure to or word of mouth about the device").
27. Since at least 2001, ABC has consistently garnered more than 50% of the revenue in the mosquito abatement market. CX-123 at ABC 015260-015261.

28. Out of all of the sales in the mosquito abatement category, products that practiced the claims of the '243 patent accounted for 82% of the sales in 2001, 66% of the sales in 2002, and 86% of the market in 2003. CX-123C at ABC 018261.
29. Sales of the claimed invention account for the majority of the revenue earned in the mosquito abatement product category for those sale years. CX-123C at ABC 018260.
30. At the time that ABC introduced its first propane-based insect trap, the use of CO₂ gas to attract insects, especially mosquitoes, was well known in the art. However, at that time, most consumers who used insect traps were using bug-zappers or other traps that did not use CO₂ gas technology. *See* Iannetta Tr. 70; Apperson Tr. 430-434; DeYoreo Dep. (RX-446) Tr. 234-235.

VI. ENFORCEABILITY

1. Mr. Wigton testified at the hearing that he informed his patent attorney about the '776 patent. *See* Wigton Tr. 626.
2. With respect to disclosures of prior art, Mr. Miller, who testified only during a deposition, stated: "All I can say is that I know that everything that we had on file that we thought was in any way germane we gave to our patent attorneys. He prepared the patent application." Miller Dep. (CX-220) Tr. 277;
3. No evidence was presented concerning the intentions of the patent attorney.
4. The Skeeter-Eater had not been commercially available for a matter of years before the '243 patent application was filed. *See* DeYoreo Dep. (RX-227C) Tr. 234-236.
5. Mr. Miller testified that he had observed a Skeeter-Eater. He also testified that he thought the product was extremely hot and apparently ineffective from a commercial

standpoint. *See* Miller Dep. (CX-220C) Tr. 141-142, 268.

6. The inventors and their prosecuting attorney submitted product literature from Teledyne Brown showing a combustion chamber and a thermoelectric module. CX-3 at ABC011715, ABC 011815-819.
7. Wigton and Miller were using a Teledyne Brown system in their insect trapping experiments. Wigton Tr. 619; Miller Dep. (CX-220C) Tr. 287-290.
8. Although the Teledyne Brown system had problems in connection with insect trapping – it exhausted too much carbon monoxide – it was commercially available at the time. Wigton Dep. Tr. 615; Miller Dep. (CX-220C) Tr. 287-290.

VII. DOMESTIC INDUSTRY

1. It is further without controversy that ABC's domestic investments and/or activities satisfy the economic "prong" or requirement. *See, e.g.*, Tr. 53.
2. The intake and outlet system of many ABC insect traps (i.e., the Mosquito Magnet Pro traps) consists of an outflow tube that is concentrically surrounded by an inflow tube, in an arrangement similar to that depicted in Figure 1 of the '243 patent. *See* Neitzel Tr. 261-266, 348.
3. The CO₂ gas in the Mosquito Magnet Pro devices is released near the trap inlet, given the construction of the term "near" as set forth in this Initial Determination. The CO₂ exhaust is so near the intake that it is immediately surrounded by the intake, with the end of the exhaust tube extending about three inches beyond the end of the suction tube. *See* Cardé Tr. 128.
4. It is more likely than not that due to the placement and function of the exhaust and intake

tubes in ABC's Mosquito Magnet Pro devices, the "near" limitation would be met, even if counterflow were required by independent claim 1 of the '243 patent. *See* '243 Patent (CX-1), col. 5, lines 12-16; Cardé Tr. 128; Neitzel Tr. 261-266, 347-348.

5. Complainant manufactures and sells a brand of insect traps under the name Mosquito Magnet, including the "Pro," "Liberty," and "Defender" models. Iannetta Tr. 59; CPX-5; CPX-6; CPX-7; CPX-8.
6. Specifically, the Mosquito Magnet is an insect trapping device that has an inlet for the entry of insects. Neitzel Tr. 264; CX-94; CPX-5; CPX-6; CPX-7; CPX-8.
7. The Mosquito Magnet insect traps all have an inlet for the entry of insects that is only about three inches above the point that the carbon dioxide gas is released to the surrounding atmosphere. Neitzel Tr. 261-264; CPX-5; CPX-6; CPX-7; CPX-8.
8. Many if not all of the Mosquito Magnet devices have a hydrocarbon fueled generating system that is comprised of a combustion chamber and a thermoelectric module. Neitzel Tr. 266-267; CPX-5; CPX-6; CPX-7; CPX-8.
9. The Mosquito Magnet traps combust propane in a combustion chamber to create carbon dioxide, heat and water vapor. Neitzel Tr. 261-262.
10. To start the combustion process, a Mosquito Magnet device uses a piezo-electric device that deforms a crystal to produce a voltage, which is used to create a spark between two contacts. Neitzel Tr. 264.
11. In the Mosquito Magnet insect traps the combustion gases exhaust from the outlet of the combustion chamber to a coupling which takes the gases to the exhaust system. Neitzel Tr. 262-263.

12. In the Mosquito Magnet insect traps, the combustion gases get mixed with ambient air that acts as a coolant. Neitzel Tr. 263; Blue Rhino's Supp. Responses to ABC's Admissions Requests, No. 20 at 45.
13. The cooled carbon dioxide is released from the outlet at a temperature above ambient but below 115° F. Neitzel Tr. 266; CX-256 at 2.
14. A physical inspection reveals that the Mosquito Magnet Pro insect trap has an "attractant exhaust system being structured and arranged to cool heated CO₂ gas." CPX-7; Neitzel Tr. 261-265.
15. Through the combustion of propane, Mosquito Magnet products emit a gaseous flow of carbon dioxide, a known insect attractant, out of the trap to the surrounding atmosphere at a location "near the trap inlet." Iannetta Tr. 64-65; Neitzel Tr. 261-265; CX-256 at 1-2.
16. A fan brings ambient air into the device and mixes that air with heated CO₂ gas, which acts to cool the heated CO₂ gas. Neitzel Tr. 265.
17. The heat generated by this combustion creates a temperature difference so that a thermoelectric module provides all of the power necessary to drive the fans. Iannetta Tr. 65.
18. The fan that serves to mix the heated gas with ambient air also serves to exhaust the cooled CO₂ gas to the surrounding atmosphere. Iannetta Tr. 65; Neitzel Tr. 263.
19. The gas exits the Mosquito Magnet, and is released to the surrounding atmosphere at the end of the exhaust pipe. Iannetta Tr. 64-65; Neitzel Tr. 265; CPX-5; CPX-6; CPX-7; CPX-8; RX-6.
20. The Mosquito Magnet insect traps all have an annular, concentric arrangement like that

- shown and described in the detailed description of the '243 patent. *See* CPX-5; CPX-6; CPX-7; CPX-8; '243 Patent (CX-1), col. 5, lines 4-24. Both Figure 3 of the '243 patent and the schematic of the Mosquito Magnet Pro show traps with nearly identical configurations and components. '243 Patent (CX-1), Fig. 3, col. 4, lines; CX-142C.
21. The Mosquito Magnet Pro also has a collection tube for the entry of insects. CX-142C; CPX-7.
 22. The Mosquito Magnet Pro has an "attractant plume tube" to provide a flow of attractant to the atmosphere. CX-142C; CPX-7.
 23. The Mosquito Magnet Pro has a "burner box" for burning propane. CX-142C; CPX-7.
 24. Figure 3 of the '243 patent shows a fan 64 in the exhaust tube 44 to mix air with the combustion gases and urge the mixture to pass through the exhaust tube 44. '243 Patent (CX-1), col. 5, lines 38-40.
 25. The Mosquito Magnet Pro has an "attractant plume fan" to mix air with the combustion gases and urge the mixture to pass through the attractant plume tube and out into the atmosphere. CX-142C; CPX-7.
 26. Figure 3 of the '243 patent is described as having about three inches between the end of the exhaust tube 48 and the end of the suction tube 32. '243 Patent (CX-1), col. 5, lines 12-14.
 27. The Mosquito Magnet Pro insect traps have about three inches between the end of the exhaust tube and the end of the suction tube. Neitzel Tr. 261-265; CPX-7.

28. The Mosquito Magnet Pro insect traps have a TEM connected to the combustion chamber, and the TEM uses the heat from combustion to generate all of the electricity required to operate the trap. Neitzel Tr. 261- 267; Iannetta Tr. 64-65.
29. The electricity from the TEM in the Mosquito Magnet Pro powers the fans in the trap – the only part of the device that requires electricity to operate. Neitzel Tr. 261-267; Iannetta Tr. 64- 65.
30. Once started, a Mosquito Magnet Pro trap does not require any outside source of electricity to operate, as long as propane is available to the trap. Iannetta Tr. 64-65; Neitzel Tr. 266-267.

CONCLUSIONS OF LAW

1. The Commission has personal jurisdiction over the parties, and subject matter jurisdiction over this investigation. *See Op. at 1-3 & n.3; FF Sections I and II.*
2. The importation or sale requirement of section 337 has been satisfied. *See Op. at 3; FF Section II.*
3. It has not been established by a preponderance of the evidence that the accused insect traps practice claim 1 or claim 32 of the '243 patent. *See Op. at 46-47; FF Sections III and IV.*
4. It has not been established by clear and convincing evidence that any asserted claim of the '243 patent is invalid under 35 U.S.C. § 112, ¶2 due to indefiniteness. *See Op. at 51; FF Section V A.*
5. It has not been established by clear and convincing evidence that any asserted claim of the '243 patent is invalid under 35 U.S.C. § 102 due to anticipation. *See Op. at 56, 59, 61-62; FF Section V B.*
6. It has not been established by clear and convincing evidence that any asserted claim of the '243 patent is invalid under 35 U.S.C. § 103 due to obviousness. *See Op. at 66-68; FF Section V C.*
7. It has not been established by clear and convincing evidence that the '243 patent is unenforceable due to inequitable conduct. *See Op. at 70; FF Section VI.*
8. It has been established that the domestic industry requirement of section 337 has been satisfied. *See Op. at 71; FF Section VII.*

INITIAL DETERMINATION AND ORDER

Based on the foregoing opinion, findings of fact, conclusions of law, the evidence, and the record as a whole, and having considered all pleadings and arguments, including the proposed findings of fact and conclusions of law, it is the Administrative Law Judge's INITIAL DETERMINATION ("ID") that no violation of section 337 of the Tariff Act of 1930, as amended, has occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain insect traps by reason of infringement of claim 1 or claim 32 of U.S. Patent No. 6,145,243.

The Administrative Law Judge hereby CERTIFIES to the Commission this ID, together with the record of the hearing in this investigation consisting of the following:

1. The transcript of the hearing, with appropriate corrections as may hereafter be ordered by the Administrative Law Judge; and further,
2. The exhibits accepted into evidence in this investigation as listed in the attached exhibit lists.

In accordance with 19 C.F.R. § 210.39(c), all material found to be confidential by the Administrative Law Judge under 19 C.F.R. § 210.5 is to be given *in camera* treatment.

The Secretary shall serve a public version of this ID upon all parties of record and the confidential version upon counsel who are signatories to the Protective Order (Order No. 1) issued by the Administrative Law Judge in this investigation, and upon the Commission investigative attorney.

To expedite service of the public version, each party is hereby ORDERED to file by no later than September 20, 2004, a copy of this ID with brackets that show any portion considered

by the party (or its suppliers of information) to be confidential, accompanied by a list indicating each page on which such a bracket is found. At least one copy of such a filing shall be served upon the Administrative Law Judge, and the brackets shall be marked in red. If a party (and its suppliers of information) consider nothing in the ID to be confidential, and thus make no request that any portion be redacted from the public version of this ID, then a statement to that effect shall be filed in lieu of a document with brackets.

Pursuant to 19 C.F.R. § 210.42(h), this ID shall become the determination of the Commission unless a party files a petition for review pursuant to § 210.43(a) or the Commission, pursuant to § 210.44, orders on its own motion a review of the ID or certain issues herein.


Sidney Harris
Administrative Law Judge

Issued: September 10, 2004

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June 3, 2004

Honorable Sidney Harris
Administrative Law Judge
U.S. International Trade Commission
500 E Street, SW -- Suite 613
Washington, DC 20436

Re: In the Matter of Certain Insect Traps
Inv. No. 337-TA-498

Dear Judge Harris:

Counsel for Complainant, Respondents and Staff have conferred regarding hearing exhibits for which we jointly request admission into evidence, and any objections thereto. Attached please find two lists: a joint exhibits list to which all parties agree, and a contested exhibits list for which your involvement may be required.

The parties have agreed to submit individually a short statement by noon tomorrow of their respective positions on the contested exhibits.

Respectfully submitted,



Paul F. Brinkman

cc: Daniel Yonan, Esq.
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**UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.**

**Before The Honorable Sidney Harris
Administrative Law Judge**

In the Matter of:

CERTAIN INSECT TRAPS

Investigation No. 337-TA-498

JOINT LIST OF EXHIBITS OFFERED INTO EVIDENCE

Exhibit No.	Witness/Bates Number	Description
RPX-5	Humphrey	Production SV27
RPX-15	Humphrey	GAL-35
RPX-16	Humphrey	Skeeter-eater
RPX-17	Humphrey	Igniter
RPX-18C	Humphrey/Berg	2004 SV Machines
RPX-33	Gorman/Humphrey	DVD - Exhibit F to Expert Report of Dr. Humphrey dated 02/02/04
RPX-37	Humphrey	Photograph of GAL-35/Skeeter-eater Combination
		Iso Vels Figure 2: Iso-velocity contours near the inlet flow region of the BR-SV35 insect trap for the case with the rain hat at its maximal point
RX-3	Humphrey	Deyoreo '458 Patent
RX-4	Humphrey	Deyoreo '776 Patent
RX-5	Humphrey	Australian Patent Application AU-A-11632/95
RX-6	Berg/Humphrey	Berg Report of 1/26/04
RX-7C	Berg/Humphrey	Berg Report of 3/2/04
RX-61	Berg/Humphrey	BR SV35-33:14 MIN.
RX-63	Berg/Humphrey	BR SV27-39:41 MIN.
RX-66	Berg/Humphrey	BR SV2000-44:18 MIN.
RX-75	Humphrey/Stevens	Letter from Stevens to Kline Dated 10/16/96 and accompanying diagram
RX-79	Humphrey	Advertising Material on Gal-35 Device
RX-80	Humphrey	Owner's Manual for Gal-35 Device
RX-82	Humphrey	Skeeter-Eater Owner's Manual Model Cg-520f
RX-85	Humphrey	Article by A. W. A. Brown (SV005173-176)
RX-86	Humphrey	Article by Bar-Zeev, et al.
RX-104	Apperson	<i>Trapping the Stable Fly by Using CO₂ or CO as Attractants</i> , Journal of Economic Entomology, p. 792-96, Jun-70

Exhibit No.	Witness/Bates Number	Description
RX-105	Apperson	<i>Evaluation of a Portable CO₂ Generator for Sampling Black Flies</i> , Journal American Mosquito Control Association, p. 515-18, Dec-85 (SV007606-609)
RX-110	Humphrey	<i>Mosquito Trapping Studies to Determine the Efficacy of Two Models of the Flowtron Mosquito Luring Device</i> , Journal of the Florida Anti-Mosquito Association, p. 13-17, 1985
RX-112	Humphrey	Miller '176 patent
RX-115	Humphrey	Cody '090 patent
RX-158C	ABCC006661-006732	Mark Miller notebook 05/03/95 - 07/25/95
RX-171C	Humphrey/Berg	DVD - Exhibit F to Expert Report of Dr. Humphrey dated 02/02/04
RX-178	DeYoreo	Increased Catches of Biting Mosquitoes by Black Light Traps Equipped with Propane Generators; T. Michael Peters, Ph.D.; A report of 1983 results submitted to Flowtron Division (AR4628-4640)
RX-179C	DeYoreo	Letter from T. Michael Peters to Sal DeYoreo, Flowtron forwarding "A comparison of CDC Light Traps enhanced by Dry Ice and By Propane Combustion" (AR4627)
RX-219C	Iannetta/ DeYoreo	07/22/03 Declaration of Raymond Iannetta w/ attached Settlement Agreement and Cross-License dated 07/26/02
RX-239	DeYoreo	Letter from T. Michael Peters to Sal DeYoreo, Flowtron forwarding "A comparison of CDC Light Traps Enhanced by Dry Ice and By Propane Combustion" (AR4627)
RX-241	DeYoreo	08/16/94 U.S. Patent No. Des. 349,746 to DeYoreo; Insect Killer (AR4691-4700)

Exhibit No.	Witness/Bates Number	Description
RX-243	DeYoreo	Vacuum Action Mosquito Control Far More Effective Than Conventional Devices (AR194-197)
RX-249	Humphrey	10/26/93 U.S. Patent 5,255,468 to Cheshire, Jr. (SV008638-8651)
RX-260	Apperson	Benzon Testing Diagram
RX-261C	Apperson	Benzon Testing (SV808-811)
RX-263		Applicant's Appeal Brief Serial No.: 08/718,643 in re: Miller, et al.
RX-267	Carde	"Behavioral mechanisms influencing catch of mosquitoes in CO ₂ -baited traps;" Cooperband, et al. (ABC21914-21920)
RX-268	Carde	Behavioral mechanisms influencing capture of mosquitoes in CO ₂ -baited traps; Cooperband and Carde (ABC21921-21925)
RX-275	Carde	L-Lactic acid: a human-signifying host cue for the anthropophilic mosquito Anopheles gambiae; Medical and Veterinary Entomology (2002) 16, 91-98.
RX-276	Carde	Structure of host-odour plumes influences catch of Anopheles gambiae S.S. and Aedes aegypti in a dual choice olfactometer; Physiological Entomology (2001) 26, 124-134.
RX-277	Kline	Large Cage and Field Comparison Tests of Mega Catch™ and Mosquito Magnet™ Traps, Daniel Kline, Ph.D., USDA. (SV000113-118)
RX-279	Kline	Comparison of Two American Biophysics Mosquito Traps: The Professional and a new Counter flow Geometry Trap, Daniel L. Kline; Journal of American Mosquito Control Association, 15(3):276-282. 1999 (SV005351-5357)

Exhibit No.	Witness/Bates Number	Description
RX-286	Apperson	A Reappraisal of Insect Flight Towards A Distant Point Source of Wind-Borne Odor, David Kennedy, Ludlow, Perry, Wall; Journal of Chemical Entomology: 8(9), 1982 (SV10177-10185)
RX-310	Humphrey	Figure SV35-2-1. Case 2. Streamlines with velocity magnitude superimposed.
RX-336	Berg	Label of Catalyst Bead Bottle
RX-348	Humphrey	McGraw-Hill Encyclopedia of Science & Technology, Seventh Edition: p. 487-488, (1992)
RX-349	Kline	Carbon Dioxide and 1-Octen-3-OL as Mosquito Attractants, Odors as Mosquito Attractants: p. 311-316, September 1989
RX-350	Kline	Field Evaluation of Heat as an Added Attractant to Traps Baited With Carbon Dioxide and Octenol For Aedes Taeniorhynchus, Kline and LeMire; Journal of American Mosquito Control Assoc., 11(4):454-456, 1995
RX-352	Stevens/Kline	04/17/96 Letter from Dave Stevens to Daniel Kline (KL100032-33)
RX-358	Kline	Evaluation of various models of propane-powered mosquito traps, Kline; Journal of Vector Ecology: 1-7, June 2002 (ABC005783-5789)
RX-359	Kline	Evaluation of various models of propane-powered mosquito traps, Daniel Kline; Journal of Vector Ecology, Vol. 27, No. 1:1-7, June 2002
RX-366	Stevens	08/23/96 E-mail from Stevens to Kline (KL100043)
RX-397C	Miller	05/30/96 Letter sent to Companies (ABC020587-20588)
RX-400C	Miller	10/21/96 Letter from Miller to McAlonan (ABC020606)
RX-401C	Miller	11/12/94 Notes from Mosquito Ecology: Field Sampling Methods by M.W. Service (ABC020607-20609)

Exhibit No.	Witness/Bates Number	Description
RX-420	Gorman	Roy T. Gorman report
RX-423	Humphrey	Isovels Figure 2: Iso-velocity contours near the inlet flow region of the BR-SV35 insect trap for the case with the rain hat at its maximal point
RX-434	Humphrey	Strykowski article: "The Influence of Velocity and Density Ratios on the Dynamics of Spatially Developing Mixing Layers"
RX-435	Humphrey	Strykowski article: "The Stability of Countercurrent Mixing Layers in Circular Jets"
RX-436	Berg	Perry's Chemical Engineers' Handbook Seventh Edition, p. 23-7, 23-8 (1997)
RX-443	Gorman	Catalyst used in Skeeter Eater during Berg/Gorman experiments
RX-446		Designation of Deposition Testimony of Salvatore DeYoreo dated February 19, 2004
RX-447		Designation of Deposition Testimony of David Stevens dated March 30, 2004
RX-448		Designation of Deposition Testimony of Mark Miller dated January 13, 2004
RX-449		Designation of Deposition Testimony of Mark Miller dated February 24, 2004
RX-450		Designation of Deposition Testimony of Mark Miller dated March 30, 2004
RX-451		Excerpt of Deposition Testimony of Bruce Wigton Taken January 7, 2004, page 263, line 6 to 9 (For Impeachment Only)
RX-452		Excerpt of Deposition Testimony of Bruce Wigton Taken March 11, 2004, page 137, line 7 to page 138, line 10 (For Impeachment Only)
CX-1	ABC021952-021966	Certified United States Patent No. 6,145,243 (Wigton <i>et al.</i>)

Exhibit No.	Witness/Bates Number	Description
CX-2	ABC002788 - 002803	Certified United States Patent No. 6,286,249 (Miller <i>et al.</i>)
CX-3	ABC011652 - 011819	Certified Prosecution History of United States Patent No. 6,145,243
CX-4	ABC011402 - 011650	Certified Prosecution History of United States Patent No. 6,286,249
CX-5	ABC010924 - 011369	Certified Re-Examination History of United States Patent No. 6,145,243
CX-6	ABC010397 - 010923	Certified Re-Examination History of United States Patent No. 6,286,249
CX-7C	ABC002623	Document entitled, "What We Know" (June 15, 1996)
CX-10C	ABC006444 - 006516	Laboratory notebook of M. Miller (July 26, 1995 - November 15, 1995)
CX-11C	ABC006444 - 006516	Laboratory notebook of M. Miller (January 1, 1995 - May 3, 1995)
CX-12C	ABC006592 - 006660	Laboratory notebook of M. Miller (November 16, 1995 - February 23, 1996)
CX-13C	ABC006811 - 006857	Laboratory notebook of B. Wigton (June 15, 1996 - August 19, 1996)
CX-14C	ABC006892 - 006958	Laboratory notebook of M. Miller (February 23, 1996-October 10, 1996)
CX-38C	ABC018104 - 018112	Power point presentation entitled, "Corporate Overview" (2000)
CX-103	SV012089 - 012095	SkeeterVac SV1000 Owner's Manual (2003)
CX-104	SV007866 - 007877	SkeeterVac SV-27 Owner's Manual (2004)
CX-105	SV007878 - 007889	SkeeterVac SV-35 Owner's Manual (2004)

Exhibit No.	Witness/Bates Number	Description
CX-106	SV007890 - 007909	SkeeterVac SV2000 Owner's Manual (2004)
CX-110	ABC012069 - 012087	www.rhino-net.com
CX-116	ABC021914 - 021920	Cooperband, M.S., K.A. Justus and R.T. Cardé. 2000. Behavioral mechanisms of influencing catch of mosquitoes in CO2-baited traps. Annual Report of the University of California Systemwide Mosquito Research Program. Pp. 34-40.
CX-117	ABC021921 - 021925	Cooperband, M.S., K.A. Justus and R.T. Cardé. 2001. Behavioral mechanisms of influencing capture of mosquitoes in CO2-baited traps. Annual Report of the University of California Systemwide Mosquito Research Program. Pp. 37-41.
CX-123C	ABC018258 - 018302	American Biophysics Corporation 2004 Strategic Planning Meeting (June 25, 2003)
CX-124	AR04624 - 04626	Flowtron Skeeter-Eater Owners Manual
CX-127	ABC021912 - 021913	Article entitled, "Inc. 500: The No. 1 Company" by L. Kolodny Fall 2003 issue of Inc. 500 Magazine
CX-133	ABC012033 - 012035	American Biophysics Corporation v. Biting Insect Technologies, Inc. Civil Action No. 02-150 Stipulated Dismissal Pursuant to Fed. R. Civ. P. 41 (a)(1)(ii) (May 20, 2002)
CX-134C	ABC012028 - 012031	Settlement Agreement and Cross License; American Biophysics Corporation v. Arnatron International, Inc. d/b/a Flowtron Outdoor Products; Civil Action No. CA-01-353L and American Biophysics Corporation v. Arnatron International, Inc. d/b/a Flowtron Outdoor Products Civil Action No. CA-01-520L (July 26, 2002)

Exhibit No.	Witness/Bates Number	Description
CX-137	ABC001342 - 001343	Re-examination Certificate for U.S. Patent 6,145,243 (Issued: July 8, 2003)
CX-138	ABC013799 - 013800	Re-examination Certificate for U.S. Patent 6,286,249 (Issued: October 7, 2003)
CX-142C	ABC018046	American Biophysics Corporation schematic of the Mosquito Magnet (September 18, 1998)
CX-152	ABC014545-014554	American Biophysics Corporation advertisement (2003)
CX-153	ABC002764 - 002769	American Biophysics Corporation advertisement entitled, "How the Mosquito Magnet Works"
CX-154C	ABC017994	Table entitled, "1998 - 2003 Unit Sales" (June 30, 2003)
CX-165C	ABC006734 - 006735	Document entitled, "American Biophysics History" (May 30, 1990 - September 23, 1997)
CX-186C	ABC020587 - 020588	Letter to selected generator companies from M. Miller re need for thermoelectric generator prototypes (May 30, 1996)
CX-187C	ABC020603 - 020605	Letter to M. Miller from R. McCreery re Tellurex Corporation thermoelectric generator price quote (June 6, 1996)
CX-196	ABC021979 - 021995	Blue Rhino Corporation SkeeterVac product information from www.bluerhino.com/SkeeterVac/index.html including pages entitled, "How SkeeterVac Traps Exterminate," "About Mosquitoes," "Effective, Easy, and Affordable," "Product for Every Need," "FAQs," "Where to Purchase," and "Expert Assistance"
CX-203		The American Heritage Dictionary, at 331, 332, 400, 450, 663, 883, 1043, 1213, 1234, and 1387 (2d. Coll. Ed. 1985)

Exhibit No.	Witness/Bates Number	Description
CX-204		The McGraw-Hill Dictionary of Scientific and Technological Terms, at 473, 967, and 1977 (5 th Ed. 1994)
CX-206		Kirk-Othmer, Encyclopedia of Chemical Technology, 4 th Ed., vol. 5, at 342 (1993), distinguishing between platinum beads vs. chromium alumina
CX-210C	Joseph A.C. Humphrey 3/19/04 deposition testimony	[317:1] - [320:4]; [340:12] - [341:6]; [342:4] - [342:20] (For Impeachment Purposes Only)
CX-219C	Mark Miller, 1/13/04 (Vol. 1) deposition testimony	[11:2] - [12:2]; [44:24] - [45:17]; [71:25] - [74:1]; [84:9] - [86:1]; [119:4] - [121:6]; [124:3] - [124:14]; [125:11] - [125:19]; [125:18] - [126:3]; [126:4] - [126:17]; [146:17] - [147:25]
CX-220C	Mark Miller, 2/24/04 (Vol. 2) deposition testimony	[233:25] - [235:3]; [240:5] - [240:11]; [241:24] - [244:4]; [255:1] - [257:8]; [261:24] - [262:6]; [269:9] - [269:15]; [302:10] - [302:17]; [330:7] - [331:10]; [333:17] - [333:23]; [359:17] - [359:22]; [360:16] - [361:24]; [374:5] - [374:21]; [409:17] - [410:25]; [430:21] - [431:18]; [438:16] - [439:4]
CX-227C	Salvatore DeYoreo, 2/19/04 deposition testimony	[59:14] - [61:13]; [66:9] - [68:15]; [103:5] - [103:17]; [103:23] - [104:2]; [105:24] - [106:24]; [108:16] - [108:19]; [108:20] - [111:14]; [133:15] - [134:17]; [136:5] - [136:20]; [139:1] - [139:18]; [155:13] - [157:5]; [217:18] - [218:15]; [231:10] - [234:6]; [235:24] - [236:13]

Exhibit No.	Witness/Bates Number	Description
CX-229C	David Stevens, 3/30/04 deposition testimony	[46:23] – [47:2]; [47:13] – [50:13]; [61:13] – [61:21]; [62:9] – [62:17]; [76:24] – [77:16]; [92:3] – [92:19]; [108:24] – [110:14]; [111:20] – [113:1]; [117:15] – [118:11]
CX-232C	Joseph A.C. Humphrey 4/3/04 deposition testimony	[566:1] – [568:25]; [714:22] – [716:10] (For Impeachment Purposes Only)
CX-233C	Daniel L. Kline, 4/2/04 deposition testimony	[1:1] – [2:9]; [4:1] – [4:21]; [67:8] – [70:17]; [141:9] – [141:20]; [148:2] – [152:19]
CX-236	ABC012178 - 012269	Original photographs of ABC traps including photo album index
CX-242		New York Times Magazine article "Total Pest Control: Military technology is deployed to fight the backyard war on the mosquito" by Rob Walker
CX-246C	Mark Miller, 3/30/04 deposition testimony	[481:25] – [483:7]; [483:3] – [483:24]; [489:10] – [490:2]; [497:12] – [497:17]; [512:2] – [512:22]; [515:6] – [515:20]
CX-250		Curriculum Vitae of Dr. Ring T. Cardé
CX-254		G. Paul Neitzel Curriculum Vitae (From Neitzel 2/3/04 Report, Appendix A)
CX-257		Dictionary definitions from American Heritage Dictionary, 2 nd Coll. Ed. 1985 (From Neitzel 2/3/04 Report, Appendix G)
CX-259		Dictionary definitions from American Heritage Dictionary, 2 nd Coll. Ed. 1985 (From Neitzel 2/17/04 Report, Appendix C)

Exhibit No.	Witness/Bates Number	Description
CX-261		Dictionary definitions from McGraw-Hill Dictionary of Scientific and Technical Terms, 5 th Ed. 1994 (From Neitzel 3/1/04 Report, Appendix C)
CPX-1		SV1000 Product
CPX-2		Blue Rhino 2004 Skeeter Vac SV-27 trap
CPX-3		Blue Rhino 2004 Skeeter Vac SV-35 trap
CPX-4		Blue Rhino 2004 Skeeter Vac SV-2000 trap
CPX-5		American Biophysics Mosquito Magnet Defender Trap
CPX-6		American Biophysics Mosquito Magnet Liberty Trap
CPX-7		American Biophysics Mosquito Magnet Pro Trap
CPX-8		American Biophysics Mosquito Magnet Freedom Trap

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

Before The Honorable Sidney Harris
Administrative Law Judge

In the Matter of:

CERTAIN INSECT TRAPS

Investigation No. 337-TA-498

JOINT LIST OF CONTENTED EXHIBITS

Exhibit No.	Witness/Bates Number	Description
RPX-23	Humphrey	Audio-Cassette tape #3; Board of Directors Meeting
RX-93	Humphrey	Transcript of ABC Board Meeting
RX-111	Humphrey	Plunkett '577 patent
RX-116	Humphrey	Yates '164 patent
RX-117	Humphrey	Cherry '368 patent
RX-119	Humphrey	Butler '009 patent
RX-120	Humphrey	Nicosia '576 patent
RX-121	Humphrey	Regan '211 patent
RX-123	Humphrey	Reid '161 patent
RX-125	Humphrey	Waters '473 patent
RX-126	Humphrey	Sherman '774 patent
RX-128	Humphrey	Millard '573 patent
RX-129	Humphrey	Chang '865 patent
RX-130	Humphrey	Montemuro '830 patent
RX-131	Humphrey	Wilson '065 patent
RX-132	Humphrey	Cavanaugh '697 patent
RX-133	Humphrey	Bible '725 patent
RX-135	Humphrey	Diegues '422 patent
RX-136	Humphrey	Wilbanks '018 patent
RX-206C		Project Summary: Electrophysical Responses of Olfactory Receptor Neurons in Mosquito Maxillary Palp Sensilla to Behaviorally Relevant Compounds by Wigton, et al. (ABC017625 - ABC017630)
RX-233	Humphrey	04/27/93 U.S. Patent 5,205,064 to Nolen; Device for Attracting and Destroying Insects
RX-453		Counter-Designation of Deposition Testimony of Dr. Daniel Kline Taken April 2, 2004

Exhibit No.	Witness/Bates Number	Description
CX-36 C	ABC017720-017744	Article entitled, "Comparison of American Biophysics Corporation's Professional Trap with the New Trap Based on Counterflow Technology" by D. Kline (1997)
CX-98	ABC014432-014439	Article entitled, "Electrophysiological Responses of Receptor Neurons in Mosquito Maxillary Palp Sensilla to Carbon Dioxide" by A.J. Grant, et al. (January 20, 1995)
CX-126	SV008867-008977	<i>Mosquito Ecology: Field Sampling Methods</i> , Chapter 6 entitled, "Sampling Adults with Carbon Dioxide Traps, Light-Traps, Visual Attraction Traps, and Sound Traps" from M.W. Service
CX-156	ABC012286-012309	United States Patent No. US 6,594,946 B2 (Nolen et al)
CX-175C	Billy Prim 12/19/03 deposition testimony	[1:1] - [2:25] ; [5:7] - [5:9] ; [5:19] - [6:8] ; [6:24] - [7:4] ; [7:10] - [7:17] ; [9:6] - [9:10] ; [10:3] - [10:24] ; [11:21] - [12:15] ; [12:16] - [12:19] ; [14:12] - [14:20] ; [15:3] - [15:11] ; [16:2] - [18:8] ; [19:17] - [20:7] ; [23:6] - [23:10] ; [25:20] - [26:4] ; [27:20] - [27:24] ; [28:5] - [29:17] ; [32:14] - [33:23] ; [35:5] - [35:11] ; [35:15] - [35:18] ; [39:18] - [40:9] ; [42:8] - [42:14] ; [46:15] - [46:21] ; [55:12] - [55:15] ; [56:13] - [56:24] ; [58:10] - [58:14] ; [65:2] - [66:16] ; [68:6] - [68:14] ; [71:20] - [72:6] ; [74:20] - [74:24] ; [75:7] - [75:22] ; [77:15] - [77:21] ; [79:13] - [80:6] ; [82:15] - [82:18] ; [83:16] - [84:1] ; [84:13] - [85:3] ; [88:2] - [89:4] ; [90:22] - [91:1] ; [91:15] - [92:11] ; [93:7] - [93:10] ; [94:22] - [94:24] ; [96:18] - [98:8] ; [98:25] - [99:12] ; [99:23] - [100:10] ; [104:24] - [105:6] ; [105:16] - [105:25]
CX-234C		Transcript from ABC Board Meetings

Exhibit No.	Witness/Bates Number	Description
CX-251		American Biophysics Corporation Materials Reviewed and Relied Upon by Dr. Ring T. Cardé (Nos. 1 - 21)
CX-252		American Biophysics Corporation Materials Reviewed and Relied Upon by Dr. Ring T. Cardé (Nos. 1 - 31)
CX-253		Appendix A to Report of Dr. Ring T. Cardé entitled, "Field Notes" regarding testing of the SV-27
CX-255		Document entitled, "Materials Reviewed by Dr. G. Paul Neitzel" (From Neitzel 2/3/04 Report, Appendix B)
CX-256		G. Paul Neitzel Test Report regarding test conducted November 20, 2003 of the Mosquito Magnet Pro, Blue Rhino SkeeterVac, and Lentek Mosquito Trap (From Neitzel 2/3/04 Report, Appendix C)
CX-258		Textbook information from Fundamentals of Fluid Mechanics, 4 th Ed. 2002 (From Neitzel 2/17/04 Report, Appendix A)
CX-260		G. Paul Neitzel SkeeterVac SV35 Test Report regarding tests conducted February 8, 2004 (From Neitzel 3/1/04 Report, Appendix A)

**UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

Before the Honorable Sidney Harris
Administrative Law Judge

In the Matter of:

CERTAIN INSECT TRAPS

Investigation No. 337-TA-498

EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-1	ABC021952-021966	Certified United States Patent No. 6,145,243 (Wigton <i>et al.</i>)	Iannetta, Neitzel, Cardé	
CX-2	ABC002788 - 002803	Certified United States Patent No. 6,286,249 (Miller <i>et al.</i>)	Iannetta, Neitzel, Cardé	
CX-3	ABC011652 - 011819	Certified Prosecution History of United States Patent No. 6,145,243	Neitzel	
CX-4	ABC011402 - 011650	Certified Prosecution History of United States Patent No. 6,286,249	Neitzel	
CX-5	ABC010924 - 011369	Certified Re-Examination History of United States Patent No. 6,145,243	Neitzel	
CX-6	ABC010397 - 010923	Certified Re-Examination History of United States Patent No. 6,286,249	Neitzel	
CX-7 C	ABC002623	Document entitled, "What We Know" (June 15, 1996)	Iannetta	
CX-8 C	ABC003819-003821	Hawaii field test data for Mosquito Magnet (October 3, 2000 - October 4, 2000)	Iannetta	

EXHIBIT NUMBER	PAGES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-9 C	ABC004422-004473	Article entitled, "Infrared Theory of Insect Attraction" by B. Wigton and M. Miller (February 15, 1992)	Iannetta, Cardé	
CX-10 C	ABC006444-006516	Laboratory notebook of M. Miller (July 26, 1995 - November 15, 1995)		
CX-11 C	ABC006517-006591	Laboratory notebook of M. Miller (January 1, 1995 - May 3, 1995)		
CX-12 C	ABC006592-006660	Laboratory notebook of M. Miller (November 16, 1995 - February 23, 1996)		
CX-13 C	ABC006811-006857	Laboratory notebook of B. Wigton (June 15, 1996 - August 19, 1996)		
CX-14 C	ABC006892-006958	Laboratory notebook of M. Miller (February 23, 1996 - October 10, 1996)		
CX-15 C	ABC006969	Facsimile to G. M. Taylor-Russell from D. Kline re American Biophysics Corporation mosquito devices (October 28, 1998)	Iannetta, Neitzel, Cardé	
CX-16 C	ABC015407-015466	American Biophysics Corporation power point presentation entitled, "The Mosquito Magnet"	Iannetta	
CX-17 C	ABC016291-016292	Email to American Biophysics Corporation staff from F. Microulis re performance update (July 21, 2003)	Iannetta	
CX-18 C	ABC016293	Email to American Biophysics Corporation staff from F. Microulis re testimonial (July 12, 2003)	Iannetta	
CX-19	ABC016310-016313	Website article entitled, "Area gets geared up to battle mosquitoes" (July 29, 2003)	Iannetta	
CX-20 C	ABC016341	Email to American Biophysics Corporation staff from F. Microulis re testimonial (June 1, 2003)	Iannetta	
CX-21 C	ABC016387	Email to American Biophysics Corporation staff from F. Microulis re testimonial (July 7, 2002)	Iannetta	

EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-22 C	ABC016393-016395	Email to American Biophysics Corporation staff from F. Microulis forwarding article entitled, "Mosquito Magnet: Independent Study Shows Most Effective Technology for Capturing Mosquitoes" (June 28, 2002)	Iannetta	
CX-23 C	ABC016445-016448	Email to M. Leveille from R. Lister re testimonial (October 7, 2002)	Iannetta	
CX-24 C	ABC016453-016454	Email to American Biophysics Corporation staff from R. Dunne re testimonial (September 16, 2002)	Iannetta	
CX-25 C	ABC016487-016488	Email to American Biophysics Corporation staff from G. Yapchaian re production forecast (June 9, 2003)	Iannetta	
CX-26 C	ABC016489-016490	Email to American Biophysics Corporation staff from G. Yapchaian re Mosquito Magnet inventory (May 21, 2003)	Iannetta	
CX-27 C	ABC016526-016527	Email to American Biophysics Corporation staff from R. Jackson re Mosquito Magnet in the Boston Globe (July 1, 2003)	Iannetta	
CX-28 C	ABC016622-016626	Email to American Biophysics Corporation staff from S. Whitmore re Mosquito Magnet press (July 1, 2003)	Iannetta	
CX-29 C	ABC016938-016939	Email to American Biophysics Corporation staff from K. Newman re SkeeterVac (April 17, 2003)	Iannetta	
CX-30 C	ABC016952-016953	Email to American Biophysics Corporation staff from R. Dunne re Blue Rhino Corporation's SkeeterVac (June 18, 2002)	Iannetta	
CX-31	ABC017009-017012	Document entitled, "Analysis of American Biophysics Corporation Global Efficacy as of 7/2003" (November 21, 2003)	Iannetta	
CX-32	ABC017027-017031	Florida A&M University testing article entitled, "Final Trap Evaluation Project" by J. P. Smith, Ph.D. (November 30, 2001)	Cardé	
CX-33 C	ABC017032-017034	Mosquito Magnet Efficacy Testing Data (August 20, 2002)	Iannetta	

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EXHIBIT NUMBER	PAGES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-34 C	ABC017533-017558	American Biophysics Corporation Executive Summary (1994)	Iannetta	
CX-35 C	ABC017708	American Biophysics invention timetable (September 18, 1996)	Iannetta	
CX-36 C	ABC017720-017744	Article entitled, "Comparison of American Biophysics Corporation's Professional Trap with the New Trap Based on Counterflow Technology" by D. Kline (1997)	Iannetta, Neitzel, Cardé	
CX-37 C	ABC017883-017886	Email to American Biophysics Corporation shareholders from J. Adam re financial update (May 15, 2002)	Iannetta	
CX-38 C	ABC018104-018112	Power point presentation entitled, "Corporate Overview" (2000)	Iannetta	
CX-39 C	ABC018258-018293	Power point presentation entitled, "2004 Strategic Planning Meeting" (June 25, 2003)	Iannetta	
CX-40 C	ABC018307	Email to G. Yapchaian from M. Brezcale (by way of F. Microulis) re Lentek Mosquito Trap (February 20, 2002)	Iannetta	
CX-41	ABC018388-018394	Mosquito Magnet Newspaper testimonials (August, 2001 to July, 2003)	Iannetta	
CX-42 C	ABC018493	Memorandum to E. Durand from R. Iannetta re meeting with Sal De Yoro (August 17, 1999)	Iannetta	
CX-43 C	SV000054	SkeeterVac trap performance comparison chart (October 8, 2002)	Neitzel	
CX-44 C	SV000153-000154	Facsimile to R. Smith from R. McCreery re TE module (September 25, 2002)		
CX-45 C	SV000232-000233	Vanward Insect Trap Schematics entitled, "C.C. Assembly" and "Combustion Heat Exchange Assembly"	Neitzel	
CX-46 C	SV000414-000415	General specifications for SkeeterVac SV2 and Mosquito Magnet sales information (2002 - 2003)		
CX-47 C	SV000794-000795	Email to R. Smith from M. Bossler re Blue Rhino Skeeter Vac testing (August 10, 2002)		
CX-48 C	SV000828	Chart entitled, "Mosquito Abatement Category"		

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EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-49 C	SV000830-000832	Document entitled, "Reverse Engineering - Mosquito Magnet Liberty" (January 20, 2003)		
CX-50 C	SV001401-001409	Power point presentation entitled, "Outdoor Comfort Solution" (June, 2002)		
CX-51 C	SV001643	Email to B. Prim, J. Shadley, M. Castaneda, K. Martin, J. Culp, and R. Belmont from T. Ferrell re Mosquito Magnet (March 18, 1999)		
CX-52 C	SV001707	Mosquito Magnet model RS Purchase Order (June 9, 2000)		
CX-53 C	SV001773-001774	Email to K. Scully and D. Kearsley from R. Belmont re SkeeterVac trap comparison data (October 8, 2002)		
CX-54 C	SV001790	Email to R. Belmont from D. Kearsley re SkeeterVac lifestyle shots (April 9, 2003)		
CX-55 C	SV002952-002954	Email to B. Prim, R. Belmont, and J. Shadley from D. Sawyer re Mosquito Magnet Meeting summary (April 13, 2000)		
CX-56 C	SV003361-003388	Email to R. Adams from T. Hurst re Blue Rhino SkeeterVac efficacy data (July 3, 2003)		
CX-57 C	SV003531-003541	Email to M. Bossler from M. F. Paul re SkeeterVac project report (August 18, 2002)		
CX-58 C	SV003564-003566	Email to L. Hall from K. Gehsmann re Mosquito Magnet (June 29, 2000)		
CX-59 C	SV003724-003728	Email to 'Uni-Asia Limited' from R. Smith re reverse thinking for Liberty (January 21, 2003)		
CX-60 C	SV003881-003888	Email to R. Belmont, T. Hurst, D. Kearsley, and R. Smith from E. Poleshuk re costing for Mosquito Magnet Liberty (January 14, 2003)		
CX-61 C	SV004248-004253	Email to MKL from M.F. Paul re mosquito killer operating pressure (November 27, 2001)		
CX-62 C	SV006159-006160	SkeeterVac comparison chart (2004)		

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EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-63	ABC012089-012095	Skeeter Vac owner's manual (2003)	Iannetta, Neitzel, Cardé	
CX-64	SV006043-006054	United States Patent Application Publication No. US2003/0208951 (Bossler)	Iannetta, Neitzel	
CX-65 C	SV003581-003586	Skeeter Vac product and unit information (February 25, 2003 - August 12, 2003)		
CX-66 C	SV003889-003892	Email to R. Achor from E. Poleshuk re Skeeter Vac competitor characteristics (April 9, 2003)		
CX-67	ABC Deposition Exhibit No. 50	Web page re Spectracide Mosquito Stop	Iannetta, Neitzel, Cardé	
CX-68 C	SV001661-001675	Power point presentation re joint venture between Blue Rhino and American Biophysics Corporation (April 24, 2000)		
CX-69 C	SV003860-003862	Email to R. Achor from T. Hurst re Blue Rhino field testing (August 22, 2003)		
CX-70 C	SV001765-001770	Email to T. Hurst from R. Belmont re Mosquito Magnet testing (January 3, 2003)		
CX-71 C	SV002493-002496	Email to R. Belmont and R. Achor from T. Hurst re USDA notes (May 27, 2003)		
CX-72 C	SV000815-000827	Power point presentation entitled, "Skeeter Vac Testing" by T. Hurst (January 23, 2003)		
CX-73 C	SV000808-000811	Power point presentation entitled, "Skeeter Vac Testing" by T. Hurst (February 21, 2003)		
CX-74		Opening Expert Report of American Biophysics expert witness, G. Paul Neitzel (February 3, 2004) (including appendices)	Neitzel	
CX-75		Rebuttal Expert Report of American Biophysics expert witness, G. Paul Neitzel (February 17, 2004) (including appendices)	Neitzel	

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EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-76		Supplemental Expert Report of American Biophysics expert witness, G. Paul Neitzel (March 1, 2004) (including appendices)	Neitzel	
CX-77		Opening Expert Report of American Biophysics expert witness, Ring T. Cardé (February 3, 2004) (including appendices)	Cardé	
CX-78		Rebutal Expert Report of American Biophysics expert witness, Ring T. Cardé (February 17, 2004) (including appendices)	Cardé	
CX-79		Supplemental Expert Report of American Biophysics expert witness, Ring T. Cardé (February 19, 2004) (including appendix)	Cardé	
CX-80 C		Blue Rhino Corporation's Response to Complaint and Notice of Investigation (October 2, 2003)	Neitzel	
CX-81 C		Blue Rhino Corporation's Response to First Amended Complaint and Second Reissued Notice of Investigation (February 4, 2004)	Neitzel	
CX-82		Guangdong's Response to First Amended Complaint and Second Reissued Notice of Investigation (February 4, 2004)	Iannetta	
CX-83 C		Blue Rhino Corporation's Response to Complainant's First Set of Interrogatories (November 6, 2003)	Neitzel	
CX-84 C		Blue Rhino Corporation's First Supplemental Responses to Complainant's First Interrogatories (December 11, 2003)	Neitzel	
CX-85 C		Blue Rhino Corporation's Second Supplemental Responses to Complainant's First Interrogatories [Nos. 5, 10-13] (January 23, 2004)	Neitzel	
CX-86 C		Blue Rhino Corporation's Second Supplemental Responses to Complainant's First Interrogatories [Nos. 1-4] (February 23, 2004) - Confidential Version	Neitzel	

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EXHIBIT NUMBER	PAGES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-87		Blue Rhino Corporation's Second Supplemental Responses to Complainant's First Interrogatories [Nos. 1-4] (February 23, 2004) - Non-Confidential Version	Iannetta, Neitzel, Cardé	
CX-88		Blue Rhino Corporation's Third Supplemental Responses to Complainant's First Set of Interrogatories [Nos. 10, 11, 12 & 13] (February 20, 2004)	Neitzel, Cardé	
CX-89 C		Blue Rhino Corporation's Response to Complainant's Second Set of Interrogatories (November 13, 2003)	Neitzel	
CX-90		Blue Rhino Corporation's Response to Complainant's Third Set of Interrogatories (December 24, 2003)	Iannetta, Neitzel	
CX-91		Blue Rhino Corporation's First Supplemental Response to Complainant's Third Set of Interrogatories (January 28, 2004)	Iannetta, Neitzel	
CX-92		Blue Rhino Corporation's Response to Complainant's Fourth Set of Interrogatories (February 5, 2004)	Neitzel, Cardé	
CX-93 C		Blue Rhino Corporation's Response to Commission Investigative Staff's First Set of Interrogatories (November 6, 2003)	Neitzel	
CX-94		Blue Rhino Corporation's Response to Complainant's First Set of Requests for Admissions (November 24, 2003)	Iannetta, Neitzel, Cardé	
CX-95		Blue Rhino Corporation's Supplemental Response to Complainant's First Set of Requests for Admissions [Nos. 14, 15, 19, 20, 22-25, 28 & 29] (February 19, 2004)	Neitzel, Cardé	
CX-96		Blue Rhino Corporation's Response to Complainant's Second Set of Requests for Admissions [Nos. 33-143] (February 19, 2004)	Iannetta, Neitzel, Cardé	
CX-97		Blue Rhino Corporation's First Set of Requests for Admissions (March 5, 2004)	Neitzel, Cardé	

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EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-98	ABC014432-014439	Article entitled, "Electrophysiological Responses of Receptor Neurons in Mosquito Maxillary Palp Sensilla to Carbon Dioxide" by A. J. Grant, et al. (January 20, 1995)	Cardé	
CX-99		Patent Application Publication No. US2003/0154643 A1 (Spiro, et al.)	Neitzel, Cardé	
CX-100		Patent Application Publication No. US2003/0154645 A1 (Spiro, et al.)	Neitzel, Cardé	
CX-101 C	SV000282-000288	OGM001 Operating Description	Neitzel	
CX-102		Blue Rhino Corporation's Expert Witness Identification (January 23, 2004)	Neitzel, Cardé	
CX-103	SV012089 - 012095	SkeeterVac SV1000 Owner's Manual (2003)	Iannetta, Neitzel	
CX-104	SV007866 - 007877	SkeeterVac SV-27 Owner's Manual (2004)	Iannetta, Neitzel, Cardé	
CX-105	SV007878 - 007889	SkeeterVac SV-35 Owner's Manual (2004)	Iannetta, Neitzel	
CX-106	SV007890 - 007909	SkeeterVac SV2000 Owner's Manual (2004)	Iannetta, Neitzel	
CX-107		United States Patent No. 6,662,489 (Spiro, et al.)	Neitzel, Cardé	
CX-108		United States Patent No. 6,655,080 (Spiro, et al.)	Neitzel, Cardé	
CX-109	ABC021926 - 021929	www.lentek.com	Iannetta, Neitzel, Cardé	
CX-110	ABC012069 - 012087	www.rhino-nel.com	Iannetta, Neitzel, Cardé	
CX-111	ABC012150 - 012157	www.mosquiomagnet.com	Iannetta, Neitzel, Cardé	
CX-112	SV005403-005408	2004 SkeeterVac advertisements	Iannetta, Neitzel, Cardé	

EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-113	SV005411-005412	2004 SV-17 Skeeter Vac advertisement	Iannetta, Neitzel, Cardé	
CX-114	SV005413-005414	2004 SV-27 Skeeter Vac advertisement	Iannetta, Neitzel, Cardé	
CX-115	SV005415-005416	2004 SV-35 Skeeter Vac advertisement	Iannetta, Neitzel, Cardé	
CX-116	ABC021914 - 021920	Cooperband, M.S., K.A. Justus and R.T. Cardé. 2000. Behavioral mechanisms of influencing catch of mosquitoes in CO2-baited traps. Annual Report of the University of California Systemwide Mosquito Research Program. Pp. 34-40.	Cardé	
CX-117	ABC021921 - 021925	Cooperband, M.S., K.A. Justus and R.T. Cardé. 2001. Behavioral mechanisms of influencing capture of mosquitoes in CO2-baited traps. Annual Report of the University of California Systemwide Mosquito Research Program. Pp. 37-41.	Cardé	
CX-118 C	ABC019917 - 019969	Letter to B. Wigton from R. Shatkansky re prior art search (July 18, 1996)	Iannetta	
CX-119	RTC0001 - 0028	Murtis, J., J.S. Elkinton and R.T. Cardé. 1992. Odor plumes and how insects use them. Annual Review of Entomology. 37:505-532.	Cardé	
CX-120 C	ABC002097-002109	Billing correspondence from Derwent Patent Services (January, 1997 - April, 1997)	Iannetta	
CX-121 C	SV000371	SV 1000 Schematic (December 19, 2001)		
CX-122 C	SV000372	Insect Trap Schematic (December 19, 2001)		
CX-123 C	ABC018258 - 018302	American Biophysics Corporation 2004 Strategic Planning Meeting (June 25, 2003)	Iannetta	
CX-124	AR04624 - 04626	Flowtron Skeeter-Eater Owners Manual	Iannetta, Neitzel	
CX-125		Blue Rhino Corporation's notice of prior art under 35 U.S.C. § 282 (March 1, 2004)	Iannetta, Neitzel, Cardé	

EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-126	SV008867 - 008977	<i>Mosquito Ecology: Field Sampling Methods</i> , Chapter 6 entitled, "Sampling Adults with Carbon Dioxide Traps, Light-Traps, Visual Attraction Traps, and Sound Traps" from M.W. Service	Cardé	
CX-127	ABC021912 - 021913	Article entitled, "Inc. 500: The No. 1 Company" by L. Kolodny Fall 2003 issue of Inc. 500 Magazine	Iannetta	
CX-128 C	SV008123 - 008149	Blue Rhino Corporation patent application entitled, "Adjustable Insect Attractant Dispenser" (June 19, 2003)	Neitzel	
CX-129 C	SV008225 - 008229	Blue Rhino Corporation design patent application file no. 0244.68106 entitled, "Pattern for the Exterior of an Insect Trap" (June 19, 2003)	Neitzel	
CX-130 C	SV008279 - 008289	Blue Rhino Corporation design patent application file no. 2102.68075 entitled, "Sticky Paper Pattern" (June 19, 2003)	Neitzel	
CX-131 C	SV008166 - 008189	Blue Rhino Corporation patent application entitled, "Tank Retention Sling" (June 19, 2003)	Neitzel	
CX-132 C	SV008261 - 008267	Blue Rhino Corporation design patent application file no. 0244.68080 entitled, "Cover for an Insect Trap that Utilizes Propane Gas" (June 19, 2003)	Neitzel	
CX-133	ABC012033 - 012035	American Biophysics Corporation v. Biting Insect Technologies, Inc. Civil Action No. 02-150 Stipulated Dismissal Pursuant to Fed. R. Civ. P. 41 (a)(1)(ii) (May 20, 2002)	Iannetta	
CX-134 C	ABC012028 - 012031	Settlement Agreement and Cross License; American Biophysics Corporation v. Armatron International, Inc. d/b/a Flowtron Outdoor Products; Civil Action No. CA- 01-353L and American Biophysics Corporation v. Armatron International, Inc. d/b/a Flowtron Outdoor Products Civil Action No. CA-01-520L (July 26, 2002)	Iannetta, Neitzel	

EXHIBIT NUMBER	EXHIBIT RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-135 C	ABC014363	American Biophysics Corporation Daily Sales Report (as of August 31, 2003)	Iannetta	
CX-136 C	ABC021880 - 021896	Employment Agreement between E. Durand and American Biophysics Corporation (January 1, 1999)	Iannetta	
CX-137	ABC001342 - 001343	Re-examination Certificate for U.S. Patent 6,145,243 (Issued: July 8, 2003)	Iannetta, Neitzel	
CX-138	ABC013799 - 013800	Re-examination Certificate for U.S. Patent 6,286,249 (Issued: October 7, 2003)	Iannetta, Neitzel	
CX-139 C	ABC021899	Letter to American Biophysics Corporation from E. Durand re purchase of stock (February 2, 1999)	Iannetta	
CX-140 C	ABC021900 - 021911	Employee Invention and Non-Competition Agreement by E. Durand and American Biophysics Corporation (September 29, 1999)	Iannetta	
CX-141	GPN 0234 - 0246	Series of web-pages from Cambridge Accusense, Inc.	Neitzel	
CX-142 C	ABC018046	American Biophysics Corporation schematic of the Mosquito Magnet (September 18, 1998)	Iannetta	
CX-143 C	ABC018045	American Biophysics Corporation schematic of the Mosquito Magnet (undated)	Iannetta	
CX-144	ABC002863 - 002865	Article entitled, "Mosquito Central" by Crittenden Consulting re comparisons between mosquito traps (August 12, 2003)	Iannetta, Cardé	
CX-145	ABC013801 - 013896	Advertisement for Frontgate (Summer, 2002)	Iannetta	
CX-146 C	ABC018604 - 018617	Notebook pages and schematics of K. Lonngren		
CX-147	SV005997 - 006042	Blue Rhino Corporation Report re SkeeterVac the Mosquito Exterminator (August 6, 2003)	Iannetta, Neitzel, Cardé	
CX-148	SV001840 - 001842	Mosquito Control Trap "Mosquito Trap Comparison Chart - Non-Pesticide Mosquito Control Products" (June 8, 2003)		

EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-149	KL10001 - 0010	Letter to D. Stevens from B. W. Clements, Jr. with attached report in determining the efficacy of two models of the Flowtron mosquito luring devices (September 5, 1984)	Iannetta	
CX-150	ABC014555 - 014558	American Biophysics Corporation advertisement entitled, "Confused by all the products that claim to eliminate mosquitoes and other biting insects?"	Iannetta	
CX-151	ABC014571 - 014572	American Biophysics Corporation press release entitled, "The Mosquito Magnet Defender - Continuous 24-hour Protection from Biting Insects"	Iannetta, Neitzel	
CX-152	ABC014545 - 014554	American Biophysics Corporation advertisement (2003)	Iannetta	
CX-153	ABC002764 - 002769	American Biophysics Corporation advertisement entitled, "How the Mosquito Magnet Works"	Iannetta, Neitzel	
CX-154 C	ABC017994	Table entitled, "1998 - 2003 Unit Sales" (June 30, 2003)	Iannetta, Neitzel	
CX-155 C	ABC014400 - 014401	American Biophysics Corporation charts re mosquito abatement category market size (2001 - 2004)	Iannetta	
CX-156	ABC012286 - 012309	United States Patent No. US 6,594,946 B2 (Nolen <i>et al.</i>)	Iannetta, Neitzel, Cardé	
CX-157	ABC012342 - 012364	United States Patent Application Pub. No. US 2003/0070346 A1 (Winner <i>et al.</i>)	Iannetta, Neitzel, Cardé	
CX-158	ABC012310 - 012334	United States Patent Application Pub. No. US 2003/0070345 A1 (Nolen <i>et al.</i>)	Iannetta, Neitzel, Cardé	
CX-159	ABC012038 - 012054	Lentek Mosquito Trap Directions for Use	Iannetta, Neitzel	
CX-160	ABC018624 - 018627	Mosquito Magnet Assembly Starting Instructions Trap Placement and Useful Suggestions (Landscape)	Iannetta, Neitzel	
CX-161	ABC018628 - 018631	Mosquito Magnet Assembly Starting Instructions Trap Placement and Useful Suggestions (Portrait)	Iannetta, Neitzel	

EXHIBIT NUMBER	PAGES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-162	ABC021943 - 021951	Carlo Constantini, et al., "Mosquito Response to Carbon Dioxide in a West African Sudan Savanna Village," Medical and Veterinary Entomology (1996)	Cardé	
CX-163	ABC021931 - 021942	F. E. Kellogg, "Water Vapour and Carbon Dioxide Receptors in Aedes Aegypti," J. Insect Physiology, 1970 Vol. 16, pp. 99-108.	Cardé	
CX-164 C	MM00969	American Biophysics Corporation development product history chart (1991 - 1997)	Iannetta	
CX-165 C	ABC006734 - 006735	Document entitled, "American Biophysics History" (May 30, 1990 - September 23, 1997)	Iannetta	
CX-166	SV001562 - 001563	Fine Tune Maximum Protection Bait System Guide (2003)	Cardé	
CX-167	ABC021930	Fine Tune - Biting Insect Lure Instructions (2003)	Cardé	
CX-168 C	Richard Achor 2/4/04 deposition testimony	[1:1] - [2:25] ; [5:7] - [5:9] ; [17:3] - [18:6] ; [19:2] - [19:8] ; [25:7] - [25:21] ; [26:8] - [26:10] ; [28:4] - [28:15] ; [28:16] - [28:17] ; [29:12] - [31:14] ; [34:19] - [35:2] ; [38:20] - [39:12] ; [41:21] - [42:3] ; [52:21] - [53:7] ; [54:8] - [54:14] ; [58:3] - [59:11] ; [59:18] - [61:6] ; [63:3] - [63:7] ; [63:9] - [64:22] ; [65:17] - [67:20] ; [68:13] - [70:12] ; [71:8] - [71:13] ; [74:16] - [77:10] ; [82:14] - [83:4] ; [94:3] - [94:14] ; [95:3] - [95:15] ; [95:25] - [106:25] ; [112:3] - [112:15] ; [120:8] - [121:10] ; [123:15] - [126:10] ; [135:10] - [136:24] ; [137:17] - [139:1] ; [139:24] - [140:18] ; [142:17] - [143:20] ; [145:16] - [146:5] ; [148:5] - [148:24] ; [152:4] - [152:17] ; [160:3] - [160:8] ; [163:24] - [164:21] ; [196:2] - [201:1] ; [201:2] - [201:13] ; [201:21] - [201:23] ; [204:11] - [204:16] ; [204:17] - [205:8] ; [206:6] - [208:10] ; [210:13] - [211:18] ; [212:6] - [212:23] ; [213:14] - [213:22] ; [214:4] - [214:7] ; [217:11] - [219:24] ; [221:10] - [222:4]	Read in	

EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-169 C	Ron Smith 12/9/03 deposition testimony	[1:1] - [2:25] ; [5:6] - [5:8] ; [16:6] - [16:23] ; [24:20] - [25:5] ; [26:17] - [26:20] ; [29:25] - [30:9] ; [34:4] - [36:8] ; [37:22] - [40:4] ; [40:23] - [42:4] ; [47:23] - [48:13] ; [51:8] - [52:4] ; [52:6] - [52:12] ; [53:12] - [53:20] ; [53:21] - [53:24] ; [53:25] - [54:1] ; [54:23] - [55:4] ; [67:15] - [68:1] ; [68:7] - [68:24] ; [69:2] - [70:13] ; [72:5] - [72:23] ; [73:23] - [74:2] ; [81:5] - [81:18] ; [89:7] - [89:25] ; [91:18] - [92:7] ; [93:17] - [95:9] ; [105:15] - [106:1] ; [108:11] - [108:19] ; [108:21] - [109:5] ; [111:2] - [112:1] ; [113:7] - [113:13] ; [115:8] - [116:11] ; [118:20] - [119:4] ; [132:1] - [135:3] ; [136:17] - [136:25] ; [137:22] - [138:15] ; [141:19] - [143:14] ; [144:19] - [144:25] ; [145:2] - [145:12] ; [146:23] - [150:23] ; [160:17] - [161:20]	Read in	

EXHIBIT NUMBER	BATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-170 C	Martin Bossler deposition testimony	[1:1] - [2:25] ; [6:6] - [6:13] ; [16:6] - [17:1] ; [22:9] - [23:16] ; [24:22] - [25:2] ; [27:10] - [27:20] ; [30:2] - [31:2] ; [31:6] - [32:6] ; [33:13] - [34:1] ; [34:23] - [34:25] ; [35:20] - [36:5] ; [36:24] - [37:2] ; [37:7] - [37:17] ; [37:25] - [38:5] ; [38:20] - [38:24] ; [40:16] - [41:1] ; [43:3] - [43:17] ; [43:20] - [43:25] ; [45:12] - [45:16] ; [46:22] - [47:10] ; [49:16] - [51:13] ; [56:17] - [57:10] ; [57:11] - [58:6] ; [70:22] - [71:22] ; [71:24] - [72:11] ; [72:15] - [73:5] ; [73:24] - [74:18] ; [77:3] - [82:25] ; [83:2] - [83:6] ; [83:17] - [83:22] ; [110:23] - [111:3] ; [119:12] - [119:22] ; [120:12] - [120:19] ; [120:24] - [121:7] ; [127:17] - [129:6] ; [131:8] - [133:4] ; [138:14] - [140:7] ; [142:24] - [143:3] ; [146:1] - [146:11] ; [168:4] - [168:20] ; [169:2] - [169:22] ; [169:24] - [171:1] ; [177:12] - [177:22] ; [179:15] - [180:11] ; [180:12] - [182:11] ; [182:22] - [184:5] ; [184:22] - [185:9] ; [186:1] - [186:13] ; [187:21] - [189:2] ; [189:3] - [189:12] ; [189:13] - [190:6] ; [190:7] - [190:12] ; [193:25] - [195:1]	Read in	

EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-171 C	Richard Belmont 12/11/03 deposition testimony	[1:1] - [2:25] ; [5:3] - [5:5] ; [32:15] - [32:18] ; [35:23] - [36:2] ; [35:23] - [36:2] ; [36:13] - [36:24] ; [38:20] - [40:5] ; [41:15] - [42:15] ; [46:9] - [47:22] ; [53:5] - [53:7] ; [55:22] - [56:10] ; [56:12] - [56:18] ; [57:21] - [57:24] ; [59:14] - [59:21] ; [60:9] - [60:17] ; [60:18] - [61:4] ; [61:25] - [62:5] ; [62:13] - [62:14] ; [62:23] - [63:1] ; [63:7] - [63:8] ; [63:20] - [63:24] ; [65:7] - [65:13] ; [72:3] - [73:2] ; [82:9] - [83:4] ; [88:2] - [89:8] ; [92:6] - [93:1] ; [97:7] - [97:16] ; [119:7] - [119:14] ; [120:12] - [120:25] ; [121:15] - [121:20] ; [122:16] - [122:21] ; [124:16] - [125:2] ; [127:4] - [127:7] ; [127:8] - [128:10] ; [130:10] - [130:21] ; [131:24] - [132:14] ; [133:16] - [134:8] ; [134:18] - [137:2] ; [137:6] - [137:9] ; [137:22] - [138:12] ; [142:15] - [143:2] ; [143:14] - [144:25] ; [146:3] - [146:16] ; [147:17] - [148:1] ; [148:8] - [148:15] ; [148:24] - [149:2] ; [150:5] - [150:7] ; [150:25] - [151:8] ; [159:1] - [159:21] ; [161:3] - [162:5] ; [163:4] - [163:14] ; [163:22] - [164:10] ; [164:16] - [165:14] ; [171:10] - [172:7] ; [189:5] - [189:12] ; [192:3] - [192:19] ; [199:17] - [200:17] ; [204:4] - [205:10] ; [207:14] - [207:16] ; [209:5] - [210:11] ; [213:8] - [214:5] ; [222:8] - [222:25]	Read in	

EXHIBIT NUMBER	EXHIBIT RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-172 C	David A. Kearsley 12/12/03 deposition testimony	[1:1] - [4:25] ; [7:2] - [7:10] ; [10:3] - [10:17] ; [20:13] - [20:20] ; [25:6] - [26:8] ; [27:4] - [29:22] ; [41:6] - [41:18] ; [43:7] - [44:3] ; [44:4] - [44:7] ; [45:17] - [47:8] ; [61:22] - [62:4] ; [70:20] - [70:24] ; [71:5] - [71:11] ; [105:16] - [105:25] ; [106:11] - [106:20] ; [109:25] - [110:16] ; [112:17] - [112:22] ; [113:24] - [114:14] ; [117:18] - [120:5] ; [123:22] - [123:25] ; [128:22] - [129:18] ; [130:6] - [130:8] ; [138:4] - [138:17] ; [144:4] - [144:22] ; [155:4] - [155:16] ; [160:25] - [161:4] ; [163:3] - [163:13]	Read in	
CX-173 C	Mark Castenada 12/18/03 deposition testimony	[1:1] - [2:25] ; [5:4] - [5:6] ; [16:20] - [16:23] ; [17:16] - [17:20] ; [19:16] - [20:8] ; [20:15] - [20:19] ; [28:24] - [29:21] ; [41:4] - [41:20] ; [46:10] - [46:21] ; [47:18] - [47:23] ; [48:22] - [49:1] ; [50:4] - [50:13] ; [52:10] - [52:12] ; [52:19] - [52:22] ; [54:9] - [54:25] ; [64:7] - [64:22] ; [66:12] - [66:18] ; [66:22] - [67:4] ; [69:16] - [70:16] ; [73:7] - [73:13] ; [74:2] - [74:11] ; [79:23] - [79:25] ; [80:11] - [80:14] ; [84:15] - [85:2] ; [86:11] - [86:20] ; [90:8] - [90:19] ; [93:6] - [94:11] ; [95:22] - [96:6] ; [96:9] - [96:14] ; [97:2] - [97:9] ; [101:18] - [102:23] ; [104:5] - [104:13]	Read in	
CX-174 C	Malcolm McQuilkin 12/18/03 deposition testimony	[1:1] - [2:25] ; [5:4] - [5:6] ; [7:25] - [8:18] ; [9:11] - [10:10] ; [11:2] - [11:8] ; [11:23] - [12:20] ; [14:13] - [14:15] ; [22:10] - [23:6] ; [24:20] - [25:1] ; [27:17] - [27:22] ; [28:9] - [28:19] ; [29:8] - [29:15] ; [29:21] - [31:9] ; [31:11] - [32:7] ; [44:15] - [44:23]	Read in	

EXHIBIT NUMBER	BYTES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-175 C	Billy Prim 12/19/03 deposition testimony	[1:1] - [2:25] ; [5:7] - [5:9] ; [5:19] - [6:8] ; [6:24] - [7:4] ; [7:10] - [7:17] ; [9:6] - [9:10] ; [10:3] - [10:24] ; [11:2] - [12:15] ; [12:16] - [12:19] ; [14:12] - [14:20] ; [15:3] - [15:11] ; [16:2] - [18:8] ; [19:17] - [20:7] ; [23:6] - [23:10] ; [25:20] - [26:4] ; [27:20] - [27:24] ; [28:5] - [29:17] ; [32:14] - [33:23] ; [35:5] - [35:11] ; [35:15] - [35:18] ; [39:18] - [40:9] ; [42:8] - [42:14] ; [46:15] - [46:21] ; [55:12] - [55:15] ; [56:13] - [56:24] ; [58:10] - [58:14] ; [65:2] - [66:16] ; [68:6] - [68:14] ; [71:20] - [72:6] ; [74:20] - [74:24] ; [75:7] - [75:22] ; [77:15] - [77:21] ; [79:13] - [80:6] ; [82:15] - [82:18] ; [83:16] - [84:1] ; [84:13] - [85:3] ; [88:2] - [89:4] ; [90:22] - [91:1] ; [91:15] - [92:11] ; [93:7] - [93:10] ; [94:22] - [94:24] ; [96:18] - [98:8] ; [98:25] - [99:12] ; [99:23] - [100:10] ; [104:24] - [105:6] ; [105:16] - [105:25]	Read in	

EXHIBIT NUMBER	PAGES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-176C	William T. Hurst 2/3/04 deposition testimony	[1:1] - [2:25] ; [5:3] - [5:5] ; [12:22] - [13:24] ; [14:11] - [15:18] ; [18:14] - [19:8] ; [19:16] - [19:20] ; [21:3] - [22:3] ; [22:22] - [23:6] ; [27:20] - [27:23] ; [28:19] - [28:24] ; [33:6] - [33:24] ; [37:2] - [37:17] ; [38:17] - [38:23] ; [38:25] - [39:5] ; [39:12] - [39:17] ; [40:1] - [40:3] ; [40:4] - [40:14] ; [40:15] - [40:21] ; [40:23] - [40:25] ; [42:25] - [44:7] ; [44:9] - [44:20] ; [46:5] - [47:8] ; [49:4] - [50:4] ; [50:14] - [50:16] ; [50:17] - [51:10] ; [53:1] - [53:3] ; [56:6] - [56:20] ; [57:18] - [60:11] ; [60:13] - [61:18] ; [65:19] - [69:17] ; [71:8] - [72:16] ; [72:23] - [74:19] ; [76:12] - [76:15] ; [76:17] - [76:23] ; [78:17] - [79:22] ; [79:23] - [80:17] ; [82:13] - [83:13] ; [87:4] - [88:13] ; [91:23] - [92:15] ; [95:18] - [95:25] ; [96:6] - [96:11] ; [96:20] - [96:23] ; [96:24] - [97:23] ; [101:14] - [101:20] ; [101:24] - [102:2] ; [103:1] - [103:17] ; [105:19] - [106:2] ; [106:11] - [106:15] ; [107:6] - [107:9] ; [109:14] - [110:21] ; [124:4] - [124:22] ; [133:8] - [133:14] ; [134:1] - [134:11] ; [134:12] - [134:21] ; [144:7] - [144:14] ; [146:24] - [147:2] ; [151:19] - [152:6] ; [152:8] - [154:13] ; [156:15] - [157:24] ; [170:3] - [171:2] ; [171:20] - [172:3] ; [188:6] - [188:22] ; [191:22] - [191:25] ; [192:1] - [192:6] ; [193:2] - [194:14] ; [195:23] - [196:3] ; [198:11] - [199:3] ; [206:12] - [206:16] ; [206:22] - [208:1] ; [208:6] - [208:21] ; [209:20] - [210:6] ; [220:3] - [220:16] ; [221:16] - [222:19]	Read in	

EXHIBIT NUMBER	BATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-177 C	Jimmy A. Nolen 2/12/04 deposition testimony	[1:1] - [2:25] ; [4:5] - [4:7] ; [5:10] - [5:16] ; [54:10] - [55:6] ; [55:7] - [55:16] ; [58:3] - [58:10] ; [72:18] - [73:4] ; [88:18] - [91:23] ; [92:23] - [93:10] ; [93:15] - [94:7] ; [94:8] - [95:7] ; [95:13] - [96:10] ; [97:14] - [99:9] ; [108:24] - [110:5] ; [110:6] - [110:13] ; [111:10] - [112:25] ; [114:6] - [114:15] ; [116:14] - [117:23] ; [118:17] - [119:23] ; [123:5] - [124:2] ; [125:1] - [125:13] ; [126:10] - [126:25] ; [127:11] - [128:4] ; [130:4] - [130:17] ; [130:18] - [133:13] ; [133:18] - [134:7] ; [143:18] - [144:2] ; [144:19] - [145:6] ; [146:12] - [146:21] ; [149:12] - [149:16] ; [151:21] - [153:1] ; [193:19] - [195:3] ; [195:4] - [195:25] ; [202:21] - [204:2] ; [205:14] - [206:4] ; [206:5] - [206:11] ; [206:23] - [207:1] ; [207:7] - [207:12] ; [208:15] - [208:22] ; [210:18] - [210:22] ; [223:4] - [223:13] ; [233:24] - [235:16] ; [235:17] - [236:19] ; [240:12] - [241:14] ; [244:2] - [244:24] ; [245:9] - [245:16] ; [245:17] - [246:21] ; [256:21] - [257:15] ; [263:19] - [264:5] ; [265:1] - [265:10] ; [269:17] - [270:24] ; [276:5] - [276:11] ; [276:12] - [277:14] ; [278:14] - [280:2] ; [281:8] - [281:14] ; [284:1] - [284:13]	Read in	
CX-178 C	Salvatore De Yoreo 2/19/04 deposition testimony	[1:1] - [3:15] ; [6:20] - [6:22] ; [16:2] - [16:4] ; [63:3] - [63:22] ; [78:3] - [78:11] ; [139:1] - [139:18] ; [152:8] - [152:18]	Read in	
CX-179 C	MM00942 - 00945 testimony	Letter to American Biophysics Corporation shareholders from B. Wigton re extensive patent search (November 5, 1996)	Iannetta, Manbeck	

EXHIBIT NUMBER	DATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-180		Original United States Patent No. 6,145,243 (Wigton <i>et al.</i>)	Iannetta, Neitzel, Cardé	
CX-181		Original United States Patent No. 6,286,249 (Miller <i>et al.</i>)	Iannetta, Neitzel, Cardé	
CX-182	ABC021952 - 021954	Clements, A.N. 1999. The Biology of Mosquitoes. Volume 2. Sensory Reception and Behaviour. CAB International, U.K. P. 472.	Cardé	
CX-183 C	ABC020889 - 020935	Laboratory notebook of B. Wigton (August 4, 1998 - October 28, 1998)		
CX-184 C	ABC021631 - 021679	Laboratory notebook of B. Wigton (October 29, 1997 - January 14, 1998)		
CX-185 C	ABC01436 - 014349	Employee Invention and Non-Competition Agreement by B. Wigton and American Biophysics Corporation (September 29, 1999)	Iannetta, Manbeck	
CX-186 C	ABC020587 - 020588	Letter to selected generator companies from M. Miller re need for thermoelectric generator prototypes (May 30, 1996)		
CX-187 C	ABC020603 - 020605	Letter to M. Miller from R. McCreery re Tellurex Corporation thermoelectric generator price quote (June 6, 1996)		
CX-188	BRC Deposition Exhibit No. 109	Emma Durand signature page	Iannetta, Manbeck	
CX-189		Blue Rhino Corporation's Responses to Complainant's Fifth Set of Interrogatories [Nos. 69-70] (March 19, 2004)	Neitzel	
CX-190 C	HUM0001 - 0036	Notebook of Dr. Joseph A. Humphrey		
CX-191 C	HUM0156 - 0158	Memorandum by Joseph A. Humphrey		

EXHIBIT NUMBER	PAGES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-192 C	HUM0211; 0221; 0363; 0471; 1215	Dr. Joseph A. Humphrey streamline test results		
CX-193 C	HUM0323 - 0334	Personal notes of Dr. Joseph A. Humphrey on the June 20, 2002 Reexamination Amendment to United States Patent No. 6,286,249		
CX-194	ABC022002 - 022005	Lentek Mosquito Traps product literature including the MK10, MK11, and MK05 Mosquito Traps from www.lentek.com	Iannetta, Neitzel	
CX-195	ABC021996 - 022001	Lentek Mosquito Traps product literature, photographs, and advertisement from www.compactappliance.com	Iannetta, Neitzel	
CX-196	ABC021979 - 021995	Blue Rhino Corporation Skeeter Vac product information from www.bluerhino.com/SkeeterVac/index.html including pages entitled, "How Skeeter Vac Traps Exterminate," "About Mosquitoes," "Effective, Easy, and Affordable," "Product for Every Need," "FAQs," "Where to Purchase," and "Expert Assistance"	Iannetta, Neitzel, Cardé	
CX-197	ABC001701 - 001706	Patent Cooperation Treaty Notification of the Transmittal of the International Search Report or the Declaration (December 2, 1997)	Iannetta, Neitzel, Manbeck?	
CX-198	ABC014664 - 014666	Lentek Advertisement entitled, "The Mosquito Trap"	Iannetta, Neitzel	
CX-199		Email to K. Kramer and J. Reiziss from P. Brinkman re Stipulation re Economic Prong of Domestic Industry (December 18, 2003)		
CX-200		American Biophysics Corporation's Discovery Statement (November 19, 2003)		

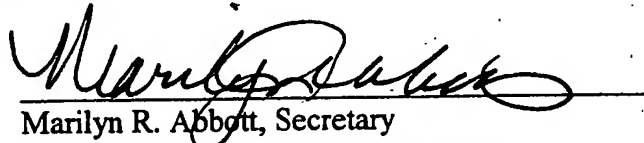
EXHIBIT NUMBER	PAGES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-201		Blue Rhino Corporation's Discovery Statement (November 19, 2003)		
CX-202 C	DK0096 - 0097	Email to M. Bossler from D. Kline re Uniflame Blue Rhino Skeeter Vac testing (August 10, 2002)		
CX-203		The American Heritage Dictionary, at 331, 332, 400, 450, 663, 883, 1043, 1213, 1234, and 1387 (2d. Coll. Ed. 1985)	Neitzel, Cardé	
CX-204		The McGraw-Hill Dictionary of Scientific and Technological Terms, at 473, 967, and 1977 (5 th Ed. 1994)	Neitzel, Cardé	
CX-205		The Random House Thesaurus at 204 (Coll. Ed. 1989)	Neitzel, Cardé	
CX-206		Distinguish between platinum beads vs. chromium alumina. Kirk-Othmer, Encyclopedia of Chemical Technology, 4 th Ed., vol. 5, at 342 (1993)	Neitzel, Cardé	
CX-207 C	Dr. G. Paul Neitzel, 3/15/04 (vol. 1) deposition testimony	[1:1] - [3:4]; [5:2] - [5:7]; [63:8] - [64:4]; [69:22] - [70:1]; [94:4] - [98:24]; [99:17] - [100:14]; [101:7] - [101:22]; [102:20] - [103:8]; [112:8] - [112:22]; [113:7] - [115:1]; [121:14] - [121:23]; [122:5] - [122:11]; [130:7] - [131:15]; [131:17] - [133:1]; [150:23] - [150:25]; [152:10] - [152:17]; [153:20] - [154:11]; [154:24] - [155:24]		

EXHIBIT NUMBER	BATES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
CX-208 C	Dr. G. Paul Netzel, 3/16/04 (vol. 2) deposition testimony	[160:1] - [161:24]; [163:6] - [163:9]; [166:14] - [167:13]; [194:1] - [194:21]; [201:25] - [203:6]; [204:1] - [205:7]; [208:10] - [209:1]; [219:17] - [220:20]; [224:21] - [225:4]; [226:25] - [227:8]; [228:6] - [229:16]; [230:18] - [231:17]; [234:6] - [235:6]; [237:2] - [237:16]; [253:3] - [257:10]; [259:21] - [260:7]; [264:4] - [265:6]; [268:17] - [269:8]; [269:21] - [271:17]; [278:18] - [279:9]; [281:16] - [282:1]; [282:5] - [283:19]; [285:1] - [287:10]; [290:5] - [291:5]; [296:8] - [296:17]; [298:11] - [298:20]; [299:23] - [300:17]; [343:22] - [345:9]; [369:19] - [371:4]; [371:16] - [371:25]; [372:20] - [372:24]; [373:12] - [373:24]; [373:25] - [374:17]; [376:20] - [378:6]; [378:7] - [379:7]; [381:5] - [381:15]		
CX-209 C	Dr. Joseph A. Humphrey, 3/18/04 (vol. 1) deposition testimony	[1:1] - [4:5]; [7:7] - [7:8]; [16:21] - [19:9]; [24:4] - [24:19]; [24:20] - [29:19]; [29:20] - [30:23]; [32:5] - [32:8]; [33:15] - [37:4]; [38:18] - [38:22]; [39:20] - [45:8]; [46:18] - [47:22]; [51:8] - [52:3]; [53:2] - [55:4]; [57:18] - [58:9]; [72:20] - [74:22]; [76:24] - [77:21]; [78:2] - [79:14]; [79:22] - [80:9]; [83:19] - [85:6]; [85:18] - [86:9]; [92:5] - [92:16]; [95:21] - [96:16]; [100:18] - [101:25]; [102:5] - [104:19]; [105:3] - [108:11]; [109:9] - [110:22]; [114:23] - [115:14]; [115:20] - [116:15]; [116:16] - [117:25]; [121:19] - [122:7]; [122:23] - [123:19]; [123:21] - [124:3]; [124:4] - [124:21]; [125:8] - [125:13]; [129:5] - [130:10]; [131:3] - [132:15]; [134:14] - [134:24]; [135:18] - [136:14]; [138:13] - [139:15]; [149:11] - [155:11]; [155:21] - [156:4]; [157:15] - [160:10]; [160:22] - [161:10]; [165:7] - [166:9]; [167:6] - [167:25]; [168:23]		

EXHIBIT NUMBER	BYTES RANGE	EXHIBIT DESCRIPTION	SPONSORING WITNESS	RECEIVED
		- [172:14]; [175:11] - [176:24]; [177:11] - [180:11]; [183:3] - [184:15]; [184:16] - [185:3]; [187:20] - [188:25]; [189:18] - [193:7]; [200:5] - [200:12]; [202:11] - [205:9]; [205:10] - [209:6]; [209:7] - [210:20]; [218:25] - [219:22]; [220:17] - [221:23]; [225:9] - [226:2]; [230:23] - [231:20]; [235:15] - [236:12]; [236:13] - [242:15]; [243:3] - [243:12]; [243:13] - [243:20]; [244:9] - [244:17]; [244:18] - [244:22]; [246:5] - [246:16]; [246:20] - [247:11]; [250:5] - [251:14]; [257:18] - 259:10; [259:11] - [259:17]; [263:25] - [264:14]; [265:23] - [267:25]; [269:6] - [270:2]; [270:25] - [271:6]; [274:12] - [280:4]; [280:5] - [281:8]; [292:6] - [292:11]; [293:7] - [293:16]; [297:9] - [297:16]; [299:10] - [302:21]; [303:7] - [304:2]; [304:3] - [305:13]; [305:14] - [307:17]; [309:15] - [310:2]; [311:8] - 312:10]		

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached Initial Determination (Confidential) was served upon Jay H. Reiziss, Esq. and upon the following parties via first class mail, and air mail where necessary, on SEP 13 2004



Marilyn R. Abbott, Secretary
U.S. International Trade Commission
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CERTAIN INSECT TRAPS

INV. NO. 337-TA-498

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APPENDIX B

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The opinion in support of the decision being entered today was not written
for publication and is not binding precedent of the Board.

Paper No. 37

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK H. MILLER, BRUCE E. WIGTON
and KENNETH LONNGREN

Appeal No. 2000-1914
Application No. 08/718,643

OH BRIEF¹

MAILED

JAN 29 2001

PAT. & T.M. OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Before COHEN, FRANKFORT, and NASE, Administrative Patent Judges.
COHEN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 7, 11 through 16, 19, 21, 22, 26 through 32, 34 through 40, and 48 through 57. Claims 8 through 10 stand allowed. Claim 46 stands withdrawn from consideration by the examiner pursuant

¹ After a review of the appeal, this panel of the Board, in accordance with 37 CFR 1.194(c), determined that the oral hearing set for January 25, 2001 was not necessary since the examiner's three rejections under 35 U.S.C. § 103(a) could not be sustained. Counsel for appellants was so notified by Programs and Resources Administrator Craig Feinberg on January 22, 2001.

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Application No. 08/718,643

to a requirement for restriction. Claims 17, 18, 20, 23 through 25, and 47 are objected to as being dependent upon a rejected base claim but would be allowable according to the examiner if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 33 and 41 through 45 have been canceled. These claims constitute all of the claims in the application.

Appellants' invention pertains to a device for attracting insects, an insect trapping device, a method of urging insects into a device, and a method of disabling insects. A basic understanding of the invention can be derived from a reading of exemplary claims 1, 28, 31, and 40, copies of which appear in the APPENDIX to the main brief (Paper No. 28).

As evidence of obviousness, the examiner has applied the documents listed below:

Deyoreo et al (Deyoreo)	5,301,458	Apr. 12, 1994
Bible	5,329,725	Jul. 19, 1994
Butler et al (Butler)	5,417,009	May 23, 1995

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The following rejections are before us for review.²

Claims 1 through 7, 11 through 16, 19, 21, 22, 27, 31, 32, 34 through 36, 40, 48, 49,³ and 55 through 57 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Deyoreo.

Claims 26 and 37 through 39 stand rejected under 35 U.S.C. § 103 as being unpatentable over Deyoreo, as applied to claims 11 and 31 above, further in view of Butler.

Claims 28 through 30 and 50 through 54 stand rejected under 35 U.S.C. § 103 as being unpatentable over Deyoreo, as applied to claims 1, 11, 31, 40, and 48 above, further in view of Bible.

The full text of the examiner's rejections and response to the argument presented by appellants appears in the final rejection and answer (Paper Nos. 11 and 30), while the complete

² A final rejection of claims 50, 51, and 53 under 35 U.S.C. § 112, second paragraph, was overcome, as set forth in the advisory action of March 4, 1999 (Paper No. 18).

³ Claim 49 has been added to the statement of the rejection, since in the body of the rejection on page 2 of the final rejection (Paper no. 11) claim 49 is specified.

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statement of appellants' argument can be found in the main and reply briefs (Paper Nos. 28 and 33).

OPINION

In reaching our conclusion on the obviousness issues raised in this appeal, this panel of the board has carefully considered appellants' specification and claims, the applied teachings,⁴ and the respective viewpoints of appellants and the examiner. As a consequence of our review, we make the determination which follows.

This panel of the board reverses each of the examiner's rejections of appellants' claims under 35 U.S.C. § 103(a). Our reasoning appears below.

⁴ In our evaluation of the applied prior art, we have considered all of the disclosure of each document for what it would have fairly taught one of ordinary skill in the art. See In re Boe, 355 F.2d 961, 965, 148 USPQ 507, 510 (CCPA 1966). Additionally, this panel of the board has taken into account not only the specific teachings, but also the inferences which one skilled in the art would reasonably have been expected to draw from the disclosure. See In re Preda, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

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At the outset, it is important to appreciate that each of appellants' respective independent device and method claims 1, 11, 28, 31, 40, and 48 requires, inter alia, a flow of "an insect attractant".

The primary reference relied upon by the examiner in each of the obviousness rejections on appeal is the Deyoreo patent. A reading of the Deyoreo document makes it abundantly clear to us that the patentee's focus (column 1, lines 6 through 19 and column 2, lines 32 through 40) was upon an insect killer or attracting device which employs a light source to attract insects.

Based upon the overall teaching of Deyoreo alone, as relied upon by the examiner in the rejection of independent claims 1, 11, 31, 40 and 48, it is apparent to us that only impermissible hindsight and reliance upon appellants' own teaching would have enabled one having ordinary skill in the art to so alter and reconfigure the insect killer of the applied patent to yield the now claimed invention with its particular feature of a flow of insect attractant. Turning now to the other rejections, inclusive of the rejection of remaining independent claim 28, the

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examiner relies upon features found in the respective teachings of Butler (carbon dioxide as an attractant) and Bible (mesh screen). Notwithstanding the particular features relied upon by the examiner in these additional references, it is quite apparent to us that the deficiency of the Deyoreo reference is not overcome thereby. Since the evidence proffered by the examiner does not support a conclusion of obviousness relative to appellants' claims, each of the rejections on appeal must be reversed.

REMAND TO THE EXAMINER

1. On page 1 of appellants' application, U.S. Patents to Plunkett (3,196,577) and Cody (5,157,090, sic 5,167,090) are specified. The Plunkett (Fig. 2) and Cody (Fig. 3) patents each show devices which provide an outflow of air and insect attractant wherein an inflow appears to be directed near an upper edge of the outflow outside the device. The examiner should assess these documents in particular relative to independent claim 48 (and its dependent claims) under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a).

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Application No. 08/718,643

2. As acknowledged by appellants in the main brief (page 2), the examiner denied entry of a declaration (letter by Daniel Kline, Ph.D.) and an exhibit which details sales information. However, appellants request reconsideration of the refusal to consider the declaration and also point out that an amendment accompanies the appeal brief providing an updated sales report and a declaration (Raymond Iannetta). The examiner should address the noted request and amendment, each of which were not mentioned in the answer.

As a final point, we note that should the examiner reject claims under 35 U.S.C. § 103, with evidence of nonobviousness (secondary considerations) entered into the application, the examiner must assess the evidence of obviousness with the evidence of nonobviousness; See In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

In summary, this panel of the board has:

reversed the rejection of claims 1 through 7, 11 through 16, 19, 21, 22, 27, 31, 32, 34 through 36, 40, 48, 49, and 55 through 57 under 35 U.S.C. § 103(a) as being unpatentable over Deyoreo;

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reversed the rejection of claims 26 and 37 through 39 under
35 U.S.C. § 103 as being unpatentable over Deyoreo and Butler;
and

reversed the rejection of claims 28 through 30 and 50
through 54 under 35 U.S.C. § 103 as being unpatentable over
Deyoreo and Bible.

We have also remanded the application to the examiner for
consideration of the matters addressed above.

Appeal No. 2000-1914
Application No. 08/718,643

The decision of the examiner is reversed.

REVERSED AND REMANDED

IRWIN CHARLES COHEN
Administrative Patent Judge

Charles E. Frankfort
CHARLES E. FRANKFORT
Administrative Patent Judge

BOARD OF PATENT
APPEALS
AND
INTERFERENCES

JEFFREY V. NASE
Administrative Patent Judge

Appeal No. 2000-1914
Application No. 08/718,643

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